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The purpose of this study was to develop an objective, reliable and valid tool for the systematic description of selected teacher behavior evident in the teaching of the cradle in lacrosse to beginners. The tool constructed was a category system, the basis of which stemmed from examining two ideas relevant to the teaching of physical skills to beginners: (1) the type of response elicited by the teacher and (2) the components that are involved in formulating a physical education lesson that emphasized the teaching of the cradle in lacrosse to beginners.

The category system contained 12 categories and was divided into two parts, SPECIFIC and NON-SPECIFIC. The SPECIFIC part identified those teacher behaviors that were observed in which no opportunities were allowed to the students to make behavioral decisions. The NON-SPECIFIC part identified those teacher behaviors observed in which a choice(s) was offered to the students to make behavioral decisions. Eleven of the 12 categories were common to both parts of the category system.

Three judges were trained to act as observers in the use of the system. The judges viewed three specially prepared video tapes of three experienced teachers teaching the cradle to beginners. Two recording sessions were held five days apart during which time the tapes were viewed and the

observations coded. The codings from these sessions served as the data used to estimate objectivity, reliability and construct validity of the category system.

The Pearson product-moment correlation technique was used to estimate objectivity and reliability. Construct validity was determined by an examination of the quantity and distribution of the use of individual categories. Content validity of the system was assumed following careful examination of the lacrosse literature. All the categories could be upheld through direct reference to the teaching of the cradle in lacrosse to beginners.

A correlation of .90 at the .05 level of confidence was chosen for accepting the system as an objective and reliable tool. The results showed that the category system designed to systematically describe the selected teaching behavior evident in the teaching of the cradle in lacrosse to beginners was accepted as an objective, reliable and valid tool.

# THE DEVELOPMENT OF AN OBJECTIVE, RELIABLE AND VALID TOOL FOR THE SYSTEMATIC DESCRIPTION OF SELECTED TEACHER BEHAVIOR EVIDENT IN THE TEACHING OF THE CRADLE IN LACROSSE TO BEGINNERS

by

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## APPROVAL PAGE

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When things go wrong, as they sometimes will,
When the road you're trudging seems all uphill,
When the funds are low and the debts are high,
And you want to smile, but you have to sigh,
When care is pressing you down a bit --
Rest if you must, but don't you quit.

Author Unknown

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# Chapter 1

## INTRODUCTION

A basic assumption of education is that behavior can be changed. The teacher, through the use of methods, materials and evaluation is able to provide conditions to help students to learn. Initiated by the teacher, a transmission of knowledge to the students evolves through an interaction process.

This interaction process, the teaching-learning experience, has been studied and theorized. Yet not until the past few decades has there been such a growing interest in studying teaching and learning. Questions such as, what is teaching and how can teaching be described have arisen among educators. In attempts to answer such questions, a relatively new approach to studying teaching has developed among researchers (Anderson, 1971:1). This new effort called descriptive-analytic research was designed ". . . to examine and explicate the teaching process . . . to permit a better understanding of what actually happens in these real-world settings where teachers and students interact" (Anderson, 1971:2). As Anderson (1971:1), Fishman and Anderson (1971:9) and Dougherty (1971:48) have emphasized, descriptive-analytic research on teaching is not designed to

show evaluative judgments about teaching nor does it attempt to offer evidence in support of principles of effective teaching. What descriptive-analytic research does is to identify and describe events of the teaching process that, as a result, may lead to a better understanding of what actually transpired.

In recent decades, many researchers have focused their endeavors to studying teaching and learning through the use of the descriptive-analytic method (Amidon and Hough, 1967; Amidon and Flanders, 1967; Barrett, 1969; Belleck, 1963; Biddle, 1963; Bookhout, 1965; Boyd and DeVault, 1967; Hawthorne, 1968; Herbert, 1967; Howey, 1968; Rink, 1969; Withall, 1960). Although this type of research has gained considerable popularity within the educational profession, it has, in comparison, received little attention from physical educators (Anderson, 1971:1). However, some physical educators have recognized a need to systematically study teaching behavior in physical education for several reasons (Anderson, 1971; Barrett, 1971; Dougherty, 1971). Hoffman (1971:51) noted a change in teaching methods in physical education initiated by what he called "innovative teaching methods" that have fostered discontent in the way of controversy and debate among physical educators. He added that there is a need to examine those "innovative teaching methods" if they are to be understood and effectively implemented by physical educators.

Others too have noted problems and perplexity associated with physical education teaching methodology. Barrett (1971:22) recognized confusion, misinterpretation and lack of understanding of problem-solving techniques as being causes of their ineffective use. She defined problem-solving techniques as ". . . all teaching strategies which encourage the learner to make personal decisions relative to his behavior" (Barrett, 1971:22). She added that perhaps the real reason for the difficulty in efficiently implementing problem-solving techniques ". . . may be the lack of methods to systematically study a teacher's behavior" (Barrett, 1971:22).

With such uncertainty and misconceptions concerning teaching methods in physical education, there is a need for research and study beginning with an identification and description of what these methods actually are. As Anderson (1971:1) emphasized, "Descriptive-analytic research in physical education could provide the tools of inquiry as well as the data needed to intelligently monitor and guide the process of change . . ." in physical education methodology.

Perhaps through the development and use of methods to study teaching behavior, some of the uncertainty and misconceptions concerning teaching methods in physical education will be diminished. Are there any differences among teaching methods in physical education? If there are, where

do the differences lie? These are questions to be answered if teaching methods in physical education are to be modified with any efficiency.

The significance of this study is in the possible contributions it may lend to research in teaching, and also to further the investigation of teacher behavior in physical education. By developing and using a procedure for the systematic analysis of teacher behavior, it may be possible to identify more clearly and with reasonable precision how any teacher teaches a lesson. A teacher may discover a difference in what he thinks he does and what he actually did during a lesson. He can be made more aware of all observable aspects of his teaching, perhaps leading to a re-evaluation of his methods and techniques. What actually happens during a lesson may raise a variety of questions about the relationship of teaching and learning, thus possibly leading to further acquisition of knowledge about teaching and learning.

It is the hope of the author of this investigation that some insight may be gained in physical education teaching methodology through this study. Although small in scope, this study is an attempt to examine teaching in physical education in an effort to identify and perhaps improve teaching in physical education. In the identification and description of teacher behavior, what actually happens in the gymnasiums and on the fields may be better understood.

What really is involved in ". . . transmitting knowledge to these humans through the vehicle of the school" (Yamamoto, 1967:207)?

## STATEMENT OF PROBLEM

The purpose of this study was to develop an objective, reliable and valid tool for the systematic description of selected teacher behavior evident in the teaching of the cradle in lacrosse to beginners.

## DEFINITION OF TERMS

1. Beginner: a student with no previous lacrosse experience

2. Components of a physical education lesson: instructional procedures used to teach the cradle in lacrosse to beginners

3. Cradle: the coordination of arms, wrists and lacrosse stick timed to fit the running action of the player

4. Non-specific response: an action demonstrated by a student that is the result of having made decisions relative to his own behavior; a choice(s) was allowed to the student for his own decision-making

5. Physical education lesson: a lesson involving the teaching of the cradle in lacrosse to beginners

6. Specific response: an action demonstrated by a student that is the result of not having made any decisions relative to his own behavior; no choice(s) was allowed to the student for his own decision-making

7. Teacher behavior: verbal and non-verbal actions that directly pertain to the teaching of the cradle to beginners

8. Teacher intent: the verbal behavior of the teacher which determines the opportunity or lack of opportunity for decision-making given to the learner for his own response.

## ASSUMPTIONS

The following assumptions governed this study:

1. The teacher's intent of the type of student response can be identified by what the teacher says and does.

2. Teachers intend, at times, to have students respond in a set, desired way with no opportunities offered to them to be responsible for their own behavior.

3. Teachers intend, at times, to have students respond in their own way, whereby students were given opportunity to be responsible for their own behavior.

4. The use of the category system as a means for providing feedback to teachers can help teachers become more aware of their own behavior. The greater insight teachers

have into their own behavior, the more their future behavior will be influenced.

## LIMITATIONS

This study was limited by the following factors:

1. Three teachers, each teaching one 20 minute lesson, were video taped. The three video tapes were used to collect the observational data.

2. The selection of teaching behavior was limited to only the teaching of the cradle in lacrosse to beginners.

3. The teachers and students were restricted to a 70 feet by 50 feet area of the gymnasium. All were aware of the video taping process.

4. The teachers' verbal behavior that could be clearly heard was the only verbal behavior recorded.

5. The teachers' non-verbal behavior that could be clearly seen was the only non-verbal behavior recorded.

6. The style relative to the manner of teaching of one of the teachers was well-known to all the judges.

# Chapter 2

## REVIEW OF LITERATURE

Chapter 2 is divided into three parts. The first part represents a review of selected literature concerning the learning of physical skills with an emphasis on the identification of methods and techniques used by physical educators to teach beginners. A discussion of literature pertaining to the teaching of the cradle in lacrosse follows in the second part. Selected observational studies in physical education that had as their focus the analysis of teacher behavior are presented in the last part of this chapter.

## THE LEARNING OF PHYSICAL SKILLS

Learning has been defined in many ways by people of various professions and is of concern to nearly every individual. Educators and psychologists in particular are those most concerned with the investigation and advancement of knowledge in this area (Singer, 1968).

The term learning is a common one and a part of everyone's vocabulary, but an entirely satisfactory definition has yet to be proposed. However, numerous attempts have been made and a general concensus is that learning is

a permanent change in behavior (Cratty, 1967; Knapp, 1967; Lawther, 1968; Singer, 1968; Woodworth, 1954).

Concerning the learning of physical skills, authors have identified several factors relative to the learning process. Those mentioned included personal factors of the learner such as age, strength, body build and intelligence (Singer, 1971:37). Also, environmental influences on the learner were noted. Those mentioned were motivation, methods and amount of practice, the presence of other people and methods of instruction (Singer, 1971:37). For purposes of this study, the factor of methods of instruction will be of prime consideration. A presentation of methods of instruction evident in the literature relative to the teaching of physical skills to beginners follows.

## Methods of Teaching Physical Skills

In the field of education, no widely accepted comprehensive theory of instruction exists. In physical education authors have attempted to present, explain and examine those methods of teaching that do exist. Included in the following section is a discussion of those methods authors have identified in relation to teaching physical skills to beginners.

Demonstration. One method of teaching physical skills to beginners is demonstration. This was identified as any performance of a skill or its parts by a teacher or

student that is designed to give students the idea of how to do something. Cratty (1967) believed that demonstration may be helpful to the learner, but as a copy of an idea, is useful only to the extent that the student is able to identify with the demonstration and see himself in the role of the performer. Cratty (1967:49) added that ". . . observation of a complex demonstration might have a detrimental effect." Lawther (1968:53) acknowledged the use of demonstration in physical education and added, "It is perhaps the best, quick guess of what should be tried out first with all groups." Lawther (1968:53) emphasized the use of demonstration when he spoke about starting the beginner in the skill. He emphasized presenting the general idea of a skill to the student and acknowledged the use of demonstration by the teacher to help impart this idea.

Verbal explanation. Verbal instruction has been noted by authors as an additional method of teaching physical skills to beginners (Cratty, 1967; Knapp, 1967; Lawther, 1968; Lockhart, 1966; Oxendine, 1968; Singer, 1968). It is a process of describing a skill through the use of words. Knapp (1967), Lawther (1968) and Singer (1968) have agreed that verbal instruction should be minimized. Singer (1968:124) stated, "One of the biggest mistakes a teacher can make is to spend too much time on details and talking too much." Knapp (1967:27) proposed that too much verbal

instruction can impede learning, and added, "In the early stages, verbal directions should be brief and should be used mainly to direct observation. Detailed descriptions of movements should be avoided . . . ." Lawther (1968:53) emphasized that verbal explanation appears to be the most commonly used method to impart the "general idea" of a skill to beginners, and " . . . its value appears to have been greatly exaggerated and its use generally overstressed."

Manual assistance. Another way to teach physical skills to beginners is through manual assistance. Knapp (1967:25-26) defined manual assistance as " . . . actively pushing the learner's body through the desired movement . . ." and added, ". . . if used at all, should be minimal." Cratty (1967:54) encouraged the use of manual guidance because ". . . during the initial part of the learning process . . . it generally results in quicker learning." He emphasized its use to help prevent the forming of incorrect habits by the student. However, he also added that too much manual guidance during the beginning stages of learning may impede the learning process (Cratty, 1967:54). Knapp (1967), Lawther (1968), Oxendine (1968) and Singer (1968) also agreed that too much instruction of any kind, especially manual guidance, may confuse the beginner and impede learning.

Whole and part. Additional approaches to teaching skills to beginners are the whole and part methods. Variations of these methods include whole-part, part-whole-part and progressive part (Oxendine, 1968:258) and are included in this section because they all relate to either whole or part presentations.

Singer (1968:213) defined teaching through the whole method as a process that could refer to ". . . the sport itself, a skill in that sport, or even a part of that skill." Singer (1968:213) illustrated whole learning when he said:

> . . . when an arm stroke in the side stroke is taught so that each arm is practiced independently, that is an example of part learning. But if the arms are practiced as they coordinate with each other, it could be argued that whole learning is now exemplified. . . and it still could be argued that this is still part learning since the complete side stroke is not being practiced. . . .

Knapp (1967:58) stated that in the whole method, material is taught by going through it completely time after time, and in the part method, the material is divided into portions and these parts are practiced and then connected with each other. She added that sometimes parts are not learned in a sequential order in which they are performed in a final skill. Oxendine (1968:258) stated that if parts are learned in the order in which they are performed in the final skill, the progressive part method is being used. Oxendine (1968) emphasized that in the teaching of physical skills, most

skills can be taught in their entirety or broken down into parts.

Various authors have commented on whole and part learning and variations of these methods. Lawther (1968) supported the whole method, but added that if a skill is complex, it may be better to use the part-whole method. Singer (1968), after his review of the studies involving the whole and part approaches, concluded that if a skill is relatively simple, then it may be an advisable procedure to employ the whole method; if the skill is complex, it may require some sort of breakdown. Similar ideas were expressed by Oxendine (1968:259) concerning whole and part learning. He stated that one must consider the difficulty and length of the material and whether there is a relationship among the parts which gives meaning to the whole. Oxendine (1968:259) added, "The whole method seems best when the amount of learning does not exceed what the learner can comprehend."

Knapp (1967) agreed that when a skill is a relatively complex one, it may be better to use the part method. She inferred that much depended on the type of skill and on the learner in determining which method to use. In summing up, Knapp (1967:69) concluded that:

> . . . it is probably best in the learning of physical skills in physical education . . . to start with the whole method while feeling free to concentrate at any time in the case of a particular individual on any part where there is some difficulty

or weakness impeding the production and perfecting of the whole skill.

Problem-solving techniques. Additional methods and techniques used to teach skills to beginners have been proposed by physical educators in relation to innovative teaching methods in physical education (Barrett, 1971; Bilbrough and Jones, 1963; Godfrey and Kephart, 1969; Hoffman, 1971; Locke, 1969; Mosston, 1966; Singer, 1968). A common agreement has been found among authors in that these innovative methods allow students more freedom to discover different ways of performing skills according to their own movement preferences. For purposes of this investigation, those methods that encourage the learner to make personal decisions relative to his own behavior are identified as problem-solving techniques. Methods identified as "experimentation," "free exploration," "problem-solving," and "guided discovery" are considered problem-solving techniques since they all encourage the learner to make decisions relative to his behavior. An identification and discussion of each follows.

According to Godfrey and Kephart (1969:189), experimentation is a method a teacher uses in which ". . . a child is given some activity and asked to do something--anything with it." They (1969:264-265) added that it is a process of "trying out." Implied in their statements is the concept that students have opportunity to be responsible for their own behavior when being taught through experimentation.

Related to experimentation is free exploration, defined by Tillotson, et al. (1966-1969:20) as ". . . unrestricted participation in spontaneously planned activities within safe environmental settings." Similar explanations of this method have been expressed by Bilbrough and Jones (1963:15), Godfrey and Kephart (1969:189-190), Latchaw and Egstrom (1969:97) and Locke (1969:204). Godfrey and Kephart (1969:264-265) perceived free exploration as a "searching-out" process.

Another method that involves the concept of giving the student opportunity to be responsible for his own behavior is problem-solving. Tillotson, et al. (1966-1969:20-21) defined problem-solving as:

> . . . a more complex and long-term involvement of a teacher and child working together to reach a refined end-product. The problem solving process involves a cooperation effort on the part of the child and the teacher's goals; the teacher guiding the child as he explores possible solutions, chooses the best solution from the several he has discovered, and practices the chosen solution to refine it into a polished end-product.

Similar explanations of the problem-solving technique can be found in the works of Godfrey and Kephart (1969:188), Locke (1969:205) and Mosston (1966:183).

Guided discovery, according to Mosston (1966:149-150), is a process by which a teacher selects the subject matter and predetermines a sequence of steps that a student must take in order that he reach the desired end. These steps ". . . consist of questions or clues organized in a

manner which . . . leads the student to the end result. . . ." Each step is based on the student's response to the previous step(s). Mosston (1966:150) stated that in this process ". . . the student, by himself, without being given the answers has accomplished the purpose, has found the unknown--has learned." Mosston believed that even though the student is being "guided" to a specific goal, because the teacher never gives the student the answer, the student has made decisions relative to his own behavior.

Summary

There are a variety of methods used to teach physical skills to beginners. Demonstration, verbal explanation, manual assistance, whole and part and problem-solving techniques are those approaches presently used by physical educators in teaching beginners physical skills. In consideration of the complexity of a skill and the many interacting variables in the teaching-learning process, one method may be considered to be more effective than another, yet, there does not appear to be any evidence in support of teaching a skill through the use of only one method.

In light of this investigation, a discussion follows concerning those methods used by lacrosse authors to teach the cradle to beginners.

## LACROSSE

The game of lacrosse has been called the most beautiful team sport played by girls. One of the reasons, as noted by Delano (1970:1), is because of its grace and flow of movement. The skills of lacrosse are based on the ability to run, throw, catch, twist and dodge. Among the skills of the game is cradling which, by definition, is the coordinated movements of arms, wrists, hands and lacrosse stick timed to fit the running action of the player. Cradling is the process of carrying the ball in the stick.

In the lacrosse literature reviewed, the cradle was identified as one of the basic skills in lacrosse and as usually the first skill taught to a beginner. Many parts of the cradle have been emphasized by experienced players and coaches as being important to the performance of the cradle. Since this study pertains only to the teaching of the cradle to beginners, a discussion of the cradle and the methods and techniques used to teach it as found in the lacrosse literature follows in the next section.

### The Cradle

The cradle is one of the basic skills in lacrosse and was described by Delano (1970:7) as ". . . the movement of the crosse while you are in possession of the ball." She added (1970:7) that the simultaneous and rhythmical movement of all the body parts involved, i.e. arms and wrists, sets

up a force which ". . . keeps the crosse . . . wrapped around the ball so that it cannot fall out regardless of which way you may twist, turn or move."

There are several factors involved in cradling that are of key importance in the effective performance of the cradle. These factors are the grip and position and motion of the lacrosse stick.

The grip. It has been found that many authors have recognized the grip as one of the most important factors in the performance of the cradle (Boyd, 1969; Burbeck and Wheeler, 1958; Conklin, 1958-1960; Delano, 1970; Evans, 1944-1945; Fetter, 1962-1964; Haydock, (Playing Lacrosse); Lewis, 1969; Mackey, 1950-1952; Newbold and Lockley, 1955; Phillips, 1960-1962; Stenning, 1952-1954). Boyd (1969:29) enforced this idea when she said, "I cannot emphasize too strongly the importance of holding the stick correctly from the start . . . ," and added that one must ". . . continually check the grip" (Boyd, 1969:34). Stenning (1952-1954: 112) and Delano (1970:7-9) also emphasized this idea.

As described by Phillips (1960-1962:113), the grip for a right-handed player is with the left hand gripping the stick firmly at the butt end. The knuckles of the right hand are under the stick, and the V made by the thumb and

forefinger is in line with the V at the throat of the stick. Boyd (1969:29), Delano (1970:5), Evans (1944-1945:101), Fetter (1962-1964:106) and Stenning (1952-1954:112) had similar descriptions of the grip.

Position of the lacrosse stick. Another important part of the cradle was the position of the lacrosse stick (Boyd, 1969; Evans, 1944-1945; Haydock, (Playing Lacrosse); Legg, 1924; Phillips, 1960-1962; Stenning, 1952-1954). Two positions were noted, a vertical and a horizontal one. A majority of authors stressed the vertical position of the crosse in cradling (Boyd, 1969; Haydock, (Playing Lacrosse); Legg, 1924; Mackey, 1950-1952; Phillips, 1960-1962; Stenning, 1952-1954). Phillips (1960-1962:113) described the vertical position of the crosse as ". . . directly in front of the player. The stick should be vertical . . ." and perpendicular to the floor. Fetter (1962-1964:106) stated that the position of the stick should be ". . . vertical . . . and high."

Evans (1944-1945:101) emphasized a "nearly horizontal" position of the crosse when she noted:

> . . . the hand should take a loose grip, so that the crosse is nearly horizontal, the head slightly higher than the butt and the wood turned towards the player and the ground.

Motion of the lacrosse stick. The motion of the lacrosse stick in the vertical position was described by

Boyd (1969), Delano (1970) and Phillips (1960-1962:113) as a motion ". . . from side to side." Haydock (Playing Lacrosse:43) specified that the motion of the stick was from left to right in front of the body. Evans (1944-1945:101) noted that the motion of the cradle with the stick in the horizontal position was up and down, and added, "Eventually the player must be able to cradle . . . on the left and on the right. . . ."

The important parts of the cradle were identified as the grip and position and motion of the stick. A discussion of the teaching of these parts follows.

## Teaching the Cradle to Beginners

Many authors have offered various ways by which to teach the cradle to beginners. Since the grip, position and motion of the crosse were considered important parts of the cradle, this discussion concerns methods of approach to the teaching of these aspects of the cradle to beginners.

The grip. In presenting the grip to beginners, a majority of authors have indicated the explanation of the positions of the hands. Phillips (1960-1962:113) explained:

> Have the player grip the butt end . . . place the head of the crosse on the floor with the open side up. The hand should grip the stick firmly with the knuckles under and the V made by the thumb and forefinger in line with the V at the throat of the stick.

From Phillips' explanation, it can be inferred that the teacher explained verbally the grip with specific reference

made to the hands and to the positions of the hands. Evans (1944-1945:101) also acknowledged the use of verbal explanation in teaching the grip. However, her emphasis was to have the bottom hand grip the butt end of the crosse and then to ". . . lift the head of the crosse and then drop it into the other hand. This top hand should take a loose grip. . . ." Delano (1970:5) too presented the grip through verbal explanation, but her approach to teaching the grip was different. She said:

> Place the crosse flat on the ground. . . place the hand of your throwing arm at the throat of the crosse . . . pick up the crosse . . . Then grip the butt end of the crosse naturally with the other hand.

In regard to what hand should be placed at the butt end of the crosse and which at the top, most authors agreed that this was a decision to be made by the student with its basis on comfort (Boyd, 1969; Burbeck, 1958; Delano, 1970; Haydock, (Playing Lacrosse); Lewis, 1969; Newbold and Lockley, 1955; Phillips, 1960-1962). However, if the student had difficulty in making his choice, authors agreed that the student should be urged to use his normal throwing hand as the top hand (Boyd, 1969; Delano, 1970; Lewis, 1969; Phillips, 1960-1962). Boyd (1969:29) emphatically stated:

> Beginners may be allowed to experiment until they find which is the most natural position for them but I feel so strongly that the normal throwing hand should be at the top of the stick that I urge them, very forcibly, to put it there.

Position of the crosse. The position of the crosse, as mentioned earlier, according to some authors is a vertical position. In teaching the vertical position, Phillips (1960-1962:113) noted:

> Have the player grip the butt end . . . and place the head of the crosse on the floor with the open side up . . . The stick is then raised to the vertical position with the bottom hand just above waist level and the open part facing the player. The right hand is added to the throat of the stick . . . . This hand must . . . wrap around and grip the stick firmly.

Evans (1944-1945:101) was an exponent of the horizontal position of the crosse in cradling. Her explanation of teaching the position of the crosse involved lifting the head of the crosse and then dropping it into the other hand ". . . so that the crosse is nearly horizontal, the head slightly higher than the butt end and the wood turned towards the player and the ground."

Motion of the crosse. The motion of the crosse, as mentioned earlier, is from side to side in front of the body. In the teaching of this aspect, Boyd (1969:32) stated, "The beginner should start by stepping on her left foot, swinging both arms to the left as she does so, and then to the right foot." Haydock (Playing Lacrosse:43), Mackey (1950-1952:114), Phillips (1960-1962:113) and Stenning (1952-1954:111-112) all agreed to this approach. Evans (1944-1945:101), however, emphasized the ". . . up and down . . ." movement of the crosse when she said, "Players

should walk and run around, getting used to the feeling of the crosse and 'cradling' up and down in rhythm with their movement."

The discussion of how to teach the cradle to beginners basically involved breaking the skill down into its various parts through verbal explanation and analysis. Cox (1964-1966:112) noted the use of demonstration as a valuable aid to teaching both the individual parts and also the entire cradling action.

The grip and position of the lacrosse stick were usually mentioned as being taught while the student was in a stationary position, and the motion of the crosse was taught with the student involved in some locomotor action. Boyd (1969), Conklin (1958-1960), Delano (1970), Evans (1944-1945), Fetter (1962-1964), Haydock (Playing Lacrosse), Lewis (1969), and Newbold and Lockley (1955) all enforced the concept of teaching the motion of the crosse as the student travels. Boyd (1969), Haydock (Playing Lacrosse) and Stenning (1952-1954) advocated a progression as the beginner learned the motion of the crosse that involved a walk, trot and run without and then with the ball.

Teaching the cradle in its entirety. Besides those approaches previously discussed, there have been somewhat different ones cited in the literature concerning the teaching of the cradle to beginners. Several authors have

advocated teaching the cradle with emphasis on freedom of the natural movements of the body. In a recently published pamphlet by Lewis (1969), the concentration in teaching beginners the cradle was on the ability of the players to discover for themselves the most suitable way to perform a skill according to their own physique and movement preferences. Lewis (1969:8) suggested that after introducing the grip to the students, they:

> . . . can try carrying the ball. All they need to do is put the ball in the stick and run, changing direction often and weaving in and out of each other.

Lewis (1969) emphasized that it is the teacher's position to give the students certain tasks and ask questions, and through this process, the basic principles of lacrosse could be established. Lewis (1969:9) also emphasized that what was necessary at the beginning stages of cradling was that the ball should stay in the crosse and that the stick move with the running action of the player. Delano (1970:6-7) suggested an approach similar to that described by Lewis. Delano's approach involved giving the beginner a ball and a crosse and telling her to run as fast as she can, changing direction often, and at the same time, trying to keep the ball in the crosse. Newbold and Lockley (1955:111) suggested a similar approach several years previous to Lewis' idea. They stated:

> Let the beginner run about freely with the crosse and no ball. Watch and see if the swinging of the crosse (cradling) is in rhythm with the footwork. If not, a slow springy run will sometimes give the desired result.

Common to these authors is the concept in their approaches of allowing the beginners to "discover for themselves" the movements involved in cradling. Although Delano (1970:8) proposed this concept of freedom to experiment in the beginning stages, she added that if a student is having difficulty in establishing the cradling action, the teacher should give specific suggestions that might help her. She noted the use of key words, such as ". . . step on your left foot as you cradle to the left, and on your right foot as you cradle to the right" (Delano, 1970:8), to further aid the beginner.

## Summary

Lacrosse has been recognized as a game of skill and grace. One of the basic skills of the game is the cradle, which is the process of moving the lacrosse stick while maintaining possession of the ball. Authors have noted the grip, position and motion of the crosse as important aspects of the skill and have mentioned different approaches to teaching these aspects to beginners. Similar to other skills, the cradle can be taught through a breakdown of its parts or the skill can be taught in its entirety.

Some authors have encouraged teaching the cradle through demonstration or by verbal explanation of the skill and its parts, while others have suggested teaching the cradle with emphasis on allowing students to discover for themselves the most suitable way to perform the skill.

However, how the cradle is actually taught may involve more than those approaches cited in the literature. It is possible that further understanding of teaching the cradle may be attained through the systematic observation of teacher behavior. What the teacher actually does in the class may also further the understanding of the teaching process. Certain investigations have been done in physical education in attempts to identify teaching behavior. The next section reviews several of these studies.

## OBSERVATIONAL STUDIES IN PHYSICAL EDUCATION

Over the years there has been a growing interest in the study of classroom teaching. Corrigan (1967:"v") stated, "Teaching implies action or behavior. Since teaching is behavior, it can be studied systematically." Researchers in attempts to study teaching behavior have focused their efforts on the development of procedures that identify and describe these various behaviors. Through the use of different observational techniques, greater insights are being gained into the nature of teaching, into the special kind of world one finds in the classroom where teachers and pupils interact and ". . . where the mind answers the mind" (ASCD, 1967:45).

Although there have been a growing number of observational studies dealing with classroom situations, those completed in physical education are considered most

applicable to this study and therefore will serve as the major focus for this section of the review.

A discussion of those studies which had as their major emphasis the systematic description of teacher behavior in physical education situations follows. Each of the studies selected is examined in regard to purpose, system for observing behavior, and reliability, objectivity and validity.

Bookhout

The purpose of Bookhout's study (1965:4) was:

> . . . to determine by observation the patterns of teaching behavior which are related to climate formation: specifically, the pattern characteristic of teachers who create supportive climates, and the pattern characteristic of teachers who create defensive climates in their classes.

A supportive climate was defined as one characterized by (Bookhout, 1965:7):

> . . . mutual acceptance among students and teachers, and by the perception of being accepted; by absence of anxiety; by freedom to initiate; by satisfaction with group membership; and by readiness to behave adaptively.

A defensive climate was characterized by (Bookhout, 1965:7):

> . . . anxiety; a low degree of mutual acceptance; a feeling of not being accepted; submission to, or aggression against domination; fear that individual action will bring reprisal; reluctance to communicate; low affinity for the group.

Bookhout (1965:4) hypothesized that ". . . common teacher behavior is employed by physical education teachers in whose classes similar social-emotional climate exists." Bookhout

(1965:4) assumed that the teacher's behavior was largely responsible for the climate which existed and that teaching behavior which had an effect on the formulation of climate was overt behavior and could therefore be seen or heard by an observer in the class.

System for observing behavior. Bookhout (1965:37) adapted a tool originally developed by Medley and Mitzel called the Observation Schedule and Record (OScAR) to record teacher behaviors. The OScAR was designed to make it possible for an observer to record as many clearly-defined, specific teaching behaviors as possible in relation to classroom behavior. Medley and Mitzel's observation schedule identifies three dimensions of classroom behavior: social-emotional climate, emphasis on verbal learnings, and the degree to which the social structure centers about the teacher (Medley and Mitzel, 1963). Bookhout altered the schedule only to the extent that the teaching behaviors present in the schedule could pertain to physical education teaching behaviors (Bookhout, 1967:338).

Bookhout's observation schedule is as follows (1967: 341):

Description of Teaching Behavior

Participates with P, Sm, or G[a]
Allows leadership by P, Sm, or G
Answers questions of P, Sm, or G
Ignores question or rejects comment of P, Sm, or G
Invites discussion, plans with, allows planning by P, Sm, or G

Positive emotive expressions: smiles, expresses concern, encourages P, Sm, or G
Negative emotive expressions: disapproval, threat, criticism, and frowning at P, Sm, or G
Grouping used: from fixed to permissive
Static teacher
Moving teacher
Total quantity of teaching behavior directed toward P, Sm, or G
Points out error to P
Total quantity of teaching behavior directed toward P
Teacher gives initial directions or leads mass activity

[a]P, pupil; Sm, small group; G, entire class

Reliability, objectivity and validity. The codings from two observers were used as data to determine the reliability and objectivity of Bookhout's schedule (1965:37). Bookhout's tool for observing teacher behavior had a reliability and objectivity correlation coefficient of .85 or more (1967:338). Validity was not estimated.

Rink

The purpose of Rink's study (1969:4) was twofold: (1) ". . . to evaluate the movement responses of four first grade boys to teacher-stated movement problems," and (2) ". . . to design an objective and reliable tool for the observation of movement responses for analysis of movement problems."

System for observing behavior. Rink developed two category systems to observe and record behavior. A numerical value was assigned to each category resulting in the codings of the judges being in numerical form (1969:28-29).

One of Rink's category systems was designed for the analysis of movement problems, and the other involved the evaluation of student movement responses. Rink's system for the analysis of movement problems (1969:108-109) involved identifying the variety of responses called for by a problem (1969:35). She identified four categories. The categories were (1969:108-109) Root, defined as, "The root of the problem is the verb that tells what movement is to be done." Focus(s) involved ". . . a word or words that describe how a movement is to be done." The third factor, Combinations, ". . . was considered to be combinations of more than one root" (Rink, 1969:28). This category involved the number of movements (roots) and combination of movements to be done (Rink, 1969:109). Variety Called For was the fourth category. This category contained four sub-categories that involved categorizing the variety called for according to the following (Rink, 1969:109):

1. child is asked to explore a variety of solutions.

2. child is asked to find two solutions.

3. child is asked to find one solution--many solutions possible.

4. child is asked to find one solution--one solution possible.

Rink's system (1969:104) for student movement responses was:

Time - time the child spends on his interpretation of the problem out of the time available to him.

Context - the ability to stay with relationships and combinations of movements defined by the problem

Variety - the number of different specific movement responses the child exhibits to a problem.

Correctness - the correctness of the individual moves the child attempts in relation to what the problem demands

Reliability, objectivity and validity. The data used to determine the reliability and objectivity of Rink's systems were the coded observations of two video tapes of four judges. As representative of the tool for the analysis of movement problems, the correlation coefficients resulted in above .85 for three of the four judges for reliability (1969:30) and the objectivity correlation coefficients ranged from .61 - .93 (1969:29).

Rink's category system for the evaluation of student movement response showed reliability correlation coefficients ranging from .84 - .93 (1969:29) and objectivity correlation coefficients ranging from .76 - .91 (1969:24).

The validity of Rink's systems was not estimated.

## Barrett

The purpose of Barrett's study (1969:9) was:

> . . . to develop and test a procedure for systematically describing teacher-student behavior evident in primary physical education lessons implementing the concept of movement education.

System for observing behavior. Barrett's category system (1969:102) was divided into four major dimensions, Movement Tasks, Content, Guidance and Student Response. A brief description of each dimension follows:

The first dimension was Movement Tasks (1969:95) defined as:

> . . . a verbal statement or question given to the learner by the teacher which indicates the content being developed and the type of response expected by the learner and serves as the central focus of the learning experiences.

Eight types of movement tasks were identified. The essential characteristics for the identification of each task was based on varying degrees of exploration offered to the learner (1969:102-103). The Movement Tasks dimension included (1969:128):

Command
Guided Discovery
Selected Response
Specific Limitation:
    implied variety
    continuous variety
Non-specific Limitation:
    implied variety
    continuous variety
Free Exploration

The second dimension was Content (1969:97) and was defined as ". . . the subject matter (movement in particular) with which the learner is engaged." In identifying the Content dimension, Laban's analysis of movement was the prime source (1969:108). Three major aspects constituted the Content dimension (1969:110). These aspects were

sub-divided into individual categories. They were (1969: 110-115, 128):

Qualities of Movement
- Time
- Space
- Force
- Flow

Body Actions
- Body Parts
- Body Shape
- Relation of Body Parts
- Locomotor
- Non-Locomotor
- Manipulative

Spatial Movement
- Personal Space
- General Space
- Direction
- Level
- Unrelated

The third dimension was Guidance (1969:99) and was defined as ". . . verbal statements or questions which serve to guide the learner toward achievement of the lesson's objectives." Since Barrett's category system dealt only with verbal behavior (1969:116), the purpose of the categories of the Guidance dimension was to consider those suggestions that assist the learners in moving more efficiently assumed to be the type used most often by teachers in physical education classes implementing the concept of movement education.

Included in this dimension (1969:128) were:

- Focusing
- Questioning
- Accepting
- Rejecting
- Organizing
- Unrelated

The fourth and final dimension was Student Response (1969:96) and was identified as:

> . . . the degree of self-disciplined behavior the learner(s) actually exhibits in relation to the degree required as implied by the design of the movement task given.

The categories included in the fourth dimension of Barrett's system were based upon the concept that one of the major reasons for designing movement tasks with varying degrees of opportunity for individual exploration and discovery was to help the students become more self-disciplined in their learning of movement (1969:121).

Those categories that were part of this dimension were (1969:128):

Unaware of the Situation
Aware of the Situation
Responding: inappropriately
Responding: appropriately but inconsistently
Responding: appropriately and willingly

Reliability, objectivity and validity. The data used to determine the reliability, objectivity and validity of Barrett's system were the coded observations of five trained judges (1969:139). Two sessions were scheduled at which time the observers viewed 12 specially-prepared video tapes (1969:147). Six of the 12 tapes were viewed the first session during which the observations were recorded. One week later all 12 video tapes were viewed and the observations recorded. Mechanical difficulties prevented the viewing of all 12 tapes during the first session (1969:147).

In determining reliability, percentage of agreement between the coded observations of each judge from the video tapes of the first session were compared with the coded observations of the same tapes by the same judge from the second session (1969:173). Examining the results by dimensions, percentages of agreement for the Movement Tasks dimension ranged from 48-80 per cent, for the Content dimension, 73-82 per cent, for the Guidance dimension, 74-86 per cent and for Student Response, 55-85 per cent (1969:175).

In determining objectivity, each judge was paired with every other judge. The coded observations for each pair were compared and percentages of agreement estimated (1969:149). Examining the results by dimensions, percentages of agreement for the Movement Tasks dimension ranged from 32-77 per cent (1969:156), for the Content dimension, 62-82 per cent, for the Guidance dimension, 69-83 per cent and for the Student Response dimension, 59-92 per cent (1969:156).

Validity of the system was assessed in the examination of construct and content validity. The number of entries in each category and the categorization of all movement responses directly related to construct validity (1969: 183). Barrett's system (1969:188) was able to accommodate categorization to all but two observations out of a total of 4,470 observations recorded (1969:185-186). Barrett commented (1969:188) that construct validity appeared to be tenable.

Content validity indicated whether the category system was comprehensive and representative of the concept of movement education as it was being implemented in the schools (1969:188). When the category system was reviewed by four experts, they stated that they thought the system was representative and comprehensive (1969:188). Content validity was accepted as tenable.

Fishman and Anderson

The purpose of a study as described in a recent progress report conducted by Fishman and Anderson (1971:10) was ". . . to develop a procedure for recording how physical educators provide augmented feedback to students." Fishman and Anderson (1971:11) defined augmented feedback as:

> . . . a teaching behavior dependent upon the motor response of one or more students and intended to provide information related to the acquisition or performance of a motor skill.

System for observing behavior. Fishman and Anderson's system for observing and recording behavior was in the form of a checklist (1971:13). Six major categories and 20 sub-categories comprise the system. Their category system follows (1971:12-13):

1. Form
    a. Auditory Augmented Feedback
    b. Auditory-Tactile Feedback
    c. Auditory-Visual Feedback

2. Direction

   a. A Single Student
   b. A Group of Students
   c. All Students in the Class

3. Time

   a. Concurrent Feedback
   b. Terminal Feedback

4. Intent

   a. Evaluative Feedback
   b. Descriptive Feedback
   c. Comparative Feedback
   d. Explicative Feedback
   e. Prescriptive Feedback
   f. Affective Feedback

5. General Referent

   a. The Whole Movement
   b. Part of the Movement
   c. Outcome or Goal of the Movement

6. Specific Referent

   a. Rate
   b. Force
   c. Space

Reliability, objectivity and validity. The reliability, objectivity and validity of Fishman and Anderson's system has not yet been estimated (1971:15).

## Summary

As a result of a growing interest in studying teaching, investigators have focused their endeavors on the systematic descriptions of teacher behavior. To date, much of the research on teaching has centered on aspects of classroom teaching with an increasing number being applied to

physical education. Three completed studies and one in progress that had as their main purpose the identification and description of teacher behavior in physical education were discussed in relation to purpose, system for observing behavior and reliability, objectivity and validity.

## SUMMARY

The literature relevant to this study was reviewed in three parts. The first part pertained to the learning of physical skills and the methods and techniques used by physical educators to teach beginners. An identification and definition of the cradle, along with the teaching methods and techniques used in teaching the cradle in lacrosse to beginners, were presented in the second part. Four selected studies in physical education were discussed in the last part of this chapter that had as their main purpose the identification and description of different aspects of teaching behavior. The studies were presented in relation to purpose, system for observing behavior and reliability, objectivity and validity. The information drawn from this review of literature helped establish the content, methodology and procedures used in this study.

# Chapter 3

## THE CATEGORY SYSTEM

This chapter presents the category system that identifies and describes selected teacher behavior that occurs while teaching the cradle in lacrosse to beginners. The rationale for the category system will be presented first, followed by the category system itself and the recording techniques necessary for its use.

## RATIONALE FOR THE CATEGORY SYSTEM

The purpose of the category system in this study is to identify and describe selected teacher behavior evident in teaching the cradle to beginners. All category systems need a basis on which their development rests. The basis for this category system stems from examining two ideas both relevant to the teaching of physical skills to beginners. The first idea involves the type of response elicited by the teacher. The second idea relates to the components that are involved in formulating a physical education lesson which emphasizes the teaching of the cradle in lacrosse to beginners. A discussion identifying the types of responses elicited from students with emphasis on how the teacher initiates responses follows.

Types of Response

There is a great deal of literature dealing with the learning of physical skills which offers suggestions as to what the teacher can say or do to assist the learners in moving more efficiently. Several authors have investigated the approaches teachers use to elicit responses from students using as a basis the amount of choice allowed to students to respond in their own way (Barrett, 1969; Bilbrough and Jones, 1963; Mosston, 1966; Hoffman, 1971; Tillotson, et al., 1966-1969). Common agreement is found among authors in reference to two ideas: (1) that teachers can present material to students where the choice of what is to be done and how it is to be done is made entirely by the teacher with no opportunities for the students to be responsible for their own behavior, and (2) that teachers can present material to students where the students are allowed to respond in their own way with a choice or choices as to their own behavior.

For purposes of this study, a response sought by the teacher in which no opportunity is allowed to the students to make decisions relative to their own behavior will be identified as a specific response. A non-specific response will be identified as a response sought by the teacher that allows students a choice or choices as to their own behavior.

How the teacher wants the students to respond is a major consideration in this study. What the teacher says and does initiates student response, and as Bilbrough and Jones (1963:35) explained, how the teacher presents material to students is the determining factor concerning the amount of choice students have to respond. Whether there is no choice allowed to the students to respond or some choice allowed to the students is inherent in the way the teacher presents material to them. A basic assumption of this study is that the teacher's intent of the type of student response, whether it is specific in which students do not have any opportunities for decision-making, or non-specific in which students have some choice or choices as to their own behavior, can be identified by what the teacher says and does.

Specific response. Hoffman (1971) identified certain methods in physical education that teachers use in which a desired expected response is sought. He spoke of traditional methodology in physical education as ". . . the processes of explanation, demonstration, drill and practice on basic skills. . . ." (Hoffman, 1971:52). He added in his discussion of traditionalism that there are ". . . fundamental hallmarks of the traditional model of teaching . . . ," and identified one of these hallmarks as one in which the teacher ". . . creates a model for performance by telling

and showing how movements are to be performed and then commands his students to mime the prescribed model" (Hoffman, 1971:52).

Mosston (1966:19) spoke of a desired expected response elicited by teachers when he said, "The important principle involved here is that the sought responses and the stimuli used to produce them are the results of the decisions made by the teacher." Mosston emphasized that the student is told what to do and has no choice about the way he learns the material.

Bilbrough and Jones (1963:30-32) agreed with Mosston's idea when they spoke of the "Direct Method of teaching." They said that within this method ". . . the choice of activity or movement is entirely that of the teacher, . . . there are no opportunities for exploration, invention and initiative. . . ." Their analysis of the Direct Method implied that a sought desired response is initiated by the teacher in which the students are not allowed any choice about how the material is learned or how it is performed.

Tillotson, et al. (1966-1969:20-21) presented examples of teaching styles that ranged from teacher-controlled to student-controlled behavior. She identified the COMMAND style as one that implied ". . . complete control by the teacher with the child's intellectual involvement limited to

following the directions thought of and delivered by the teacher" (1966-1969:21). Her explanation emphasized an example of teacher-controlled behavior and implied the concept of not allowing any opportunities to the students to be responsible for their own behavior.

A teacher's intent of a specific response, therefore, is identified by a response elicited by the teacher in which there are not any opportunities offered to the students to be responsible for their own behavior. A discussion follows concerning a response elicited by the teacher in which there is a choice or choices given to the students to make their own behavioral decisions.

Non-specific response. As mentioned earlier, several authors have recognized the concept that through the use of various methods, teachers may desire that students respond in their own way (Barrett, 1969; Bilbrough and Jones, 1963; Dougherty, 1971; Godfrey and Kephart, 1969; Hoffman, 1971; Mosston, 1966; Tillotson, et al., 1966-1969). To analyze this concept of allowing students freedom to respond, certain investigations have been done in physical education relating to the examination of teaching methods where the students are theoretically encouraged to respond in their own way and make decisions relative to their own behavior (Anderson, 1971; Barrett, 1969; Dougherty, 1971; Fishman and Anderson, 1971). The purpose of one such

investigation was ". . . to distinguish those acts of the teacher that increase students' freedom of action from those that decrease students' freedom of action . . ." (Dougherty, 1971:39). This idea of "freedom of action" has been explained by physical educators in the identification of methods and techniques used to elicit responses from students in which an amount of freedom to make decisions relative to their own behavior is present. Godfrey and Kephart (1969:188-189) identified techniques and methods used by physical educators in which students are given freedom to respond in their own way when they discussed what they identified as components of movement education. Godfrey and Kephart (1969:187) referred to the underlying concept behind movement education as:

> . . . one of setting the stage, indicating what to do, and helping the child to do it; rather than selecting the specific activity, telling him how to do it, and directing him how to do it.

Bilbrough and Jones (1963) analyzed methods of presentation of physical skills used by physical educators with the determining factor being the amount of choice allowed to students to respond in their own way. They initiated two ideas relative to this concept: (1) that students can be completely free to choose their own activity or movement, and (2) that students can be free to respond but with their choice limited by particular factors (Bilbrough and Jones, 1963:35). Bilbrough and Jones (1963:35) further

explained that the amount of choice students have depends upon how the teacher presented the task (specific material to be learned) to which the students are to respond.

For purposes of this study, if the teacher allows students a choice or choices to respond in their own way while having made decisions relative to their own behavior, the teacher's intent of how the students are to respond is defined as non-specific. The methods and techniques relative to this study that teachers use to elicit responses follows.

## Components of A Physical Education Lesson

As mentioned earlier, a teacher's intent of student response is inherent in the manner of introducing and developing material with students in any lesson in physical education. The physical education lesson in this study involves the teaching of the cradle in lacrosse to beginners. Those methods and techniques used to teach physical skills in general, and to beginners in particular, coupled to those associated with teaching the cradle in lacrosse to beginners will be considered the source from which the components of a physical education lesson will be determined. When identified, analyzed and operationally defined, these components will formulate the categories of the category system which identifies and describes selected teacher behavior evident in the teaching of the cradle to beginners. Each component

is identified using as a basis literature relevant to the teaching of physical skills in general as well as to beginners, literature pertaining to teaching beginners the cradle in lacrosse, audio tapes and video tapes of teachers involved in teaching the cradle to beginners and the personal experience of the investigator.

The methods and techniques used to teach physical skills in general and to beginners in particular as well as to teach the cradle in lacrosse to beginners were identified in the previous chapter as demonstration, verbal explanation, manual assistance, whole and part and problem solving techniques. Through an analysis of these approaches, the components of a physical education lesson will be identified, defined and applied in the specialized context of teaching the cradle to beginners. Whenever the phrase components of a physical education lesson is used, it means instructional procedures used to teach the cradle in lacrosse to beginners.

Demonstration. According to Bilbrough and Jones (1963), Cratty (1967), Hoffman (1971), Knapp (1967), Lawther (1968), Lockhart (1966), Mosston (1966) and Singer (1968), one method used in physical education lessons to teach physical skills to beginners is demonstration. Demonstration is showing the students what to do at times accompanied by verbal instructions (Lawther, 1968). The teacher may

demonstrate a skill or may use teacher agents for the purpose. Cox (1964-1966:112) supported this method as an aid to teaching the cradle to beginners when she said, ". . . the use of more experienced players to demonstrate is valuable. . . ."

DEMONSTRATION, then, is identified as a component of a physical education lesson and is defined as:

> a performance by the teacher or student of the cradle or parts of it as to how it should be performed.

Verbal explanation. Often accompanied with demonstration is a verbal explanation and description of a skill (Lawther, 1968:53). Singer (1968:124) mentioned the use of a detailed verbal description of a skill as a teaching method, as did Berlin (1959), Hoffman (1971), and Knapp (1967). It is important to note that these authors are not necessarily advocates of this particular method. However, they do recognize that this method does exist in teaching physical skills to beginners. Boyd (1969), Haydock (Playing Lacrosse) and Phillips (1960-1962), in the literature concerning the teaching of the cradle, implied that an explanation of the skill or parts of the skill is necessary to beginners. However, no mention is made of the quantity of verbal explanation used in teaching beginners.

VERBAL ANALYSIS, then, is identified as a component of a physical education lesson and is defined as:

> the verbal description, explanation or analysis of all or parts of the cradle relative to the way it should be performed.

Manual assistance. Another way used to teach physical skills to beginners is through manual assistance. Knapp (1967:25-26) described this process as ". . . actively pushing the learner's body through the desired movement. . . ." Cratty (1967:54) recognized this method as one that fosters quicker learning during the initial part of the learning process. Lawther (1968) noted manual assistance as a way to correct an error. No author in the lacrosse literature reviewed mentioned specifically the use of manual assistance in the teaching of the cradle to beginners. However, through personal experience, the investigator has observed that the teaching of the cradle to beginners has, at times, involved manual assistance by teachers. Manual assistance has been given in relation to the motion and position of the stick, noted by several authors as mechanics of the cradle that were of key importance to the performance of the skill (Boyd, 1969; Evans, 1944-1945; Haydock, Playing Lacrosse; Legg, 1924; Newbold and Lockley, 1955; Phillips, 1960-1962; Stenning, 1952-1954).

MANUAL ASSISTANCE, then, is identified as a component of a physical education lesson, and is identified as:

> the attempts by the teacher to help the student by actually moving some part of the student's body or lacrosse stick.

Class organization. Organizational directions are a part of every physical education class in which physical skills are taught (Bookhout, 1965). As Hoffman (1971:52) stated:

> The ability to effectively engineer the movement of students from one area of the teaching environment to another is important in physical education methodology. Lack of organization results in confusion.

Organization of a class depends upon many factors such as class size, class time (Hoffman, 1971), subject matter, space and location with which the teacher must contend. Maneuvering of the class, formations and drills are organizational procedures used in physical education classes (Hoffman, 1971:52-53).

ORGANIZATION, then, is identified as a component of a physical education lesson and is defined as:

> instructions or directions a teacher uses to maneuver his class including procedural commands in reference to equipment.

Positive and negative criticism. Involved in the teaching of physical skills to beginners in physical education is the process of praising performances and also of correcting errors. Authors have called this verbal reinforcement (Cratty, 1967; Godfrey and Kephart, 1969; Hoffman, 1971; Knapp, 1967; Lawther, 1968; Mosston, 1966; Oxendine, 1968; Singer, 1968). Hoffman (1971:53) said, "The teacher's insertion of well-timed words of positive and negative reinforcement are considered essential . . ." in teaching physical skills. Lawther (1968:63) in his discussion of verbal teaching of physical skills, noted the use of ". . . verbalization to aid feedback of results . . ." to help the beginner recognize and correct his mistakes.

REINFORCEMENT, then, is identified as a component of a physical education lesson and is defined as:

> verbal criticism and/or praise a teacher uses in relation to a student's performance.

Major points of emphasis. A method of teaching physical skills to beginners was identified as verbal explanation. Involved in this method is the analysis or description of a skill as to how it should be performed (Knapp, 1967; Lawther, 1968; Singer, 1968). Authors also recognized the use of whole and part methodology in teaching physical skills to beginners (Knapp, 1967; Lawther, 1968; Oxendine,

1968; Singer, 1968). As illustrated earlier, the teaching of the cradle involved the use of both whole and part methods, with importance given to certain aspects of the cradle considered as key factors in the performance of the skill. Three major points of emphasis will be considered in light of the teaching of the parts of the cradle, elements to which direct reference is made in the lacrosse literature. They are: (1) Space, which includes level, direction and dimension; (2) Body Parts and Body Actions; and (3) Quality of Movement, referring to speed, force and flow. These three factors, space, body parts and body actions and quality of movement, are major aspects of emphasis in teaching the cradle and its parts. Each is presented as a component of a physical education lesson.

Included as a major point of emphasis, space is subdivided into three areas, level, direction and dimension. When Delano (1970:8-10) talked about the mechanics of the cradle, she implied the concept of level when she stated, ". . . keep the left hand waist high. . . ," and also, ". . . try cradling up high." Boyd (1969) emphasized level when she referred to the butt end of the crosse usually being positioned <u>waist level</u> or <u>above</u>. Fetter (1962-1964) mentioned the concept of cradling <u>high</u>. These authors have referred specifically to the concept of level in the cradle and level is considered as an expression of space.

Delano (1970:9) mentioned that ". . . you swing to the left . . . ," thus implying a specific direction by use of the word left. Haydock (Playing Lacrosse:43) referred to direction in the teaching of the cradle to beginners when she said:

> . . . the stick is kept vertical during the cradling movement which is started by taking the left hand outwards and to the left . . . and at the same time rotating the whole body to the left. . . .

Such specific words as vertical, outwards and left all refer to direction. Direction is considered as an aspect of space.

Often authors in the literature have analyzed the cradle as having a ". . . complete motion . . ." from side to side (Fetter, 1962-1964:106). Delano (1970:10), when she talked about learning to cradle on the left side of the body, said that ". . . your arms are now moving in a similar plane but with smaller action." A teacher when teaching the cradle may use words denoting dimension, as has been illustrated in the above examples, with words such as complete and smaller. Dimension is included as a spatial aspect.

As a point of emphasis,

> SPACE, then, is identified as a major point of emphasis and a component of a physical education lesson and is defined as:
>
> > the direct verbal reference made by the teacher to level, direction or dimension.

Found in the lacrosse literature are certain areas of the cradle often emphasized by teachers that relate to body parts and body actions. There was an emphasis on the grip (Boyd, 1969; Evans, 1944-1945; Newbold and Lockley, 1955; Phillips, 1960-1962) and since the grip refers to the placement of the hands on the crosse, a teacher may specifically mention the hands or the positions of the hands holding the lacrosse stick. Phillips (1960-1962:113) stated to "have the player grip the butt end with the left hand . . ." From this example, it is illustrated that teachers may make specific verbal mention to certain body parts.

A teacher may also make reference to body actions. Haydock (Playing Lacrosse:43) stated that the student ". . . rotates the whole body . . ." in the cradling action. Haydock also used other phrases that specified body actions such as ". . . extension of the left wrist . . . ," and ". . . keeping the elbow bent. . . ."

As a point of emphasis,

> BODY PARTS AND BODY ACTIONS, then, is identified as a major point of emphasis and a component of a physical education lesson and is defined as:
>
> > direct verbal references to body parts or body actions by the teacher.

In teaching the cradle, a teacher may make direct verbal reference to speed, force and flow. These three

areas are subdivisions of a major point of emphasis involving quality of movement.

A teacher may make direct verbal emphasis to certain qualities of speed (Boyd, 1969; Newbold and Lockley, 1955). Such phrases as move the crosse quickly, and cradle fast all indicate speed (Boyd, 1969; Haydock, Playing Lacrosse; Stenning, 1952-1954).

Many authors mentioned force in the teaching of the cradle. Phillips (1960-1962:113) noted that ". . . the left hand should grip the stick firmly. . . ." Boyd (1969:30) emphasized the use of the bottom hand as the strong hand in the teaching of the mechanics of the cradle.

Flow also was emphasized in teaching the cradle. Delano (1970:7) noted that ". . . the term 'cradling' . . . denotes smooth action." Kite (1964-1966:105) described the cradle as being ". . . as loose and easy as running itself. . . ."

As a point of emphasis,

> QUALITY OF MOVEMENT, then, is identified as a major point of emphasis and a component of a physical education lesson and is defined as:
>
> > the direct verbal reference made by the teacher to speed, force or flow.

Relationships. Hoffman (1971:52) mentioned the inclusion of lead-up activities and drills as part of a physical education class. In the lacrosse literature, there

are a number of lead-up games and drills that involve the use of partners (Boyd, 1969; Delano, 1970). In regard to the technique of using lead-up games and drills, lacrosse authors implied a relationship of students to other students, to objects, or to the teacher. Such phrases as "Stand directly opposite and close to a partner . . ." imply a relationship of one person to another (Delano, 1970:10) and also ". . . stand with your back against a wall and cradle" implies a relationship of a person to an object (Delano, 1970:10).

RELATIONSHIPS, then, is identified as a component of a physical education lesson and is defined as:

> the relationship of a student to another person or to an object stated verbally by the teacher.

Free exploration. Singer (1968:220) noted that ". . . considerable attention has been given lately to the exploration of skills, with an approach to initiate individual creativity in mastering movement skills." There are many facets to this approach to learning (Locke, 1969) and relevant to this study only one will be considered as a component of a physical education lesson, free exploration. Barrett (1971), Latchaw and Egstrom (1969) and Tillotson, et al. (1966-1969) recognized free exploration as a part of the learning process when teaching physical skills to beginners.

Bilbrough and Jones (1963:32), in their analysis of methods in teaching physical skills, identified the Indirect Method and explained that through this approach, the ". . . students are completely free to choose their own activity or movement." As related to lacrosse, authors have implied the use of this approach to teaching the cradle to beginners (Delano, 1970; Lewis, 1969). Newbold and Lockley (1955: 111) implied the use of maximum freedom to experiment when they said, "Let the beginner run about freely with her crosse. . . ."

FREEDOM, then, is identified as a component of a physical education lesson and is defined as:

> the allowance of complete freedom to the students to experiment with movement and with the equipment.

Verbal questions. An emerging interest in having students think through ideas to develop insight about movement has been illustrated in the physical education literature (Barrett, 1965, 1969, 1971; Latchaw and Egstrom, 1969; Mosston, 1966; Rink, 1969; Singer, 1968; Tillotson, et al., 1966-1969). One way of presenting material to students with an emphasis on having the student discover more about movement was identified by Mosston (1966:149) as guided discovery. He mentioned that within the guided discovery process, there was a sequence of steps which consisted of clues or questions that a student must take to reach the desired goal. Mosston (1966:143-230) illustrated numerous examples

of questions that could be used to teach physical skills. However, the method of asking questions does not, in this study, apply only to Mosston's guided discovery process. Regardless of what teaching method is employed, it is conceivable that a teacher may ask questions during any verbal discourse to which a movement response is the answer. The process of asking questions is nevertheless most prevalent among those approaches used that allow for individual responses.

Through the use of audio tapes and video tapes, it was perceived by the investigator that verbal questions were used while teaching the cradle to beginners. Also, Lewis (1969) and Delano (1970) acknowledged the use of asking questions in teaching beginners to cradle.

VERBAL QUESTIONS, then, is identified as a component of a physical education lesson and is defined as:

> the asking of a verbal question by the teacher to which a movement response is the answer.

The components of a physical education lesson have been identified and defined and will serve as a focus for the individual categories of the category system with the concept of teacher's intent inherent within each category. Two ideas common to the categories will be applied when the category system itself is presented: (1) that the teacher's

intent of student response is that a specific response is being sought where the students have only one way to answer with no opportunities to be responsible for their own behavior, and (2) that the teacher's intent of student response is that a non-specific response is being sought where the students have opportunity to make decisions relative to their own behavior.

Summary

Authors have identified several methods and techniques used by physical educators to teach physical skills in general and to beginners in particular. The teacher through the use of various methods and techniques is the determining factor in initiating student responses. Inherent in the teaching method is the teacher's intent as to the type of student response desired. A student may have no choice as to how he learns the material presented to him. In this case, the teacher considers that the student's response be specific. On the other hand, the teacher may offer the student opportunities to be responsible for his own behavior. In this situation, the student's response is considered to be non-specific.

The teaching of the cradle in lacrosse to beginners was identified in this study as a physical education lesson. The methods and techniques used to teach the cradle to beginners as well as those used to teach physical skills in

general were used as the source from which the components of a physical education lesson were derived. Operationally defined, the components of a physical education lesson formulate the categories of the category system which follows. Common to all but one of the categories is the concept of teacher's intent of student response, that it can be either specific or non-specific. The category system that describes selected teacher behavior evident in teaching the cradle in lacrosse to beginners follows.

## THE CATEGORY SYSTEM

The category system identifies and describes selected teacher behavior evident in a physical education lesson involving the teaching of the cradle in lacrosse to beginners. The teaching components of a physical education lesson were identified as demonstration, verbal explanation, manual assistance, class organization, positive and negative criticism, major points of emphasis including space, body parts and body actions and quality of movement, relationships, free exploration and verbal questions. Within each of the components is the underlying concept of teacher intent as related to student response. The teacher's intent may indicate a specific response elicited from students in that all the students would be expected to perform the action in the same way with no opportunities for making decisions relative to their own behavior. The teacher's

intent may be non-specific which indicates that the students are given opportunities to be responsible for their own behavior and would not be expected to perform the action in the same way. Representative of all but one component are teacher behaviors common to both a teacher's intent of a specific and a non-specific response.

The category system contains a set of categories derived from the components identified. The identification and inclusion of each category is based on at least three of the following sources:

1. Literature relevant to teaching and coaching techniques specific to the cradle in lacrosse

2. Literature relevant to the learning of physical skills

3. Audio tapes and video tapes of teachers teaching the cradle to beginners

4. Personal experience of the investigator applicable to the teaching of the cradle to beginners.

The category system is presented in the following format:

CATEGORY NAME (Coding symbol)

Explanation of the category

| Intent of Specific Response | Intent of Non-Specific Response |
|---|---|
| Explanation of intent of specific response | Explanation of intent of non-specific response |

| Examples of teacher behavior eliciting a specific response | Examples of teacher behavior initiating a non-specific response |
|---|---|

Identifying the intent of the teacher can only be accurately done when the entire verbal behavior of the teacher is heard. Therefore, in the examples given, the teacher's statements when isolated may appear to imply a specific response. However, when the complete situation is known, the teacher's statements although appearing to be specific would be identified as non-specific. The category system follows.

## DEMONSTRATION (D)

When a teacher demonstrates, he shows the students the action(s) by either performing the action himself or by having a student perform the action. The teacher may describe the demonstration with verbal accompaniment which the teacher or student is performing, or the teacher may offer no verbal accompaniment to the demonstration.

| Specific Response | Non-Specific Response |
|---|---|
| a. The teacher or student demonstrates the cradle or parts of it and at the same time verbally describes the demonstration. The intent of the teacher is that the students perform the skill exactly according to the demonstration. | a. The teacher demonstrates and verbally acknowledges an action as "incorrect", but does not show or tell the correct action. The teacher's intent is that the students discover for themselves that action that is "correct." |
| Example: "This is the cradling action, from left to right and back again." | Example: "You are doing this and that is why you are losing the ball. Keep trying, but watch this." |

b. The teacher or student demonstrates part or whole of the cradle. The teacher may stand before the class as a whole or before an individual student and perform the action with no verbal accompaniment to the demonstration.

Example: The teacher demonstrates a skill for the class to observe and asks them to copy what was observed.

b. To clarify a statement a teacher may show the student a part of the response that the student is to perform. The teacher may demonstrate only to the extent that the student understands the terminology used and still has opportunity for decision-making.

Example: The teacher may say to the students, "Cradle at different levels." To demonstrate the word levels, the teacher may show the students the different levels by merely pointing out the levels. The students then, are responsible for choosing the different levels at which to cradle.

## ANALYSIS (A)

The teacher explains, describes or analyzes the cradle or parts of it verbally concerning its performance WITH INTENT THAT THE STUDENTS LISTEN AND NOT PERFORM.

### Specific Response

The teacher verbally analyzes, explains or describes the cradle with intent that the students listen and NOT perform. When the teacher analyzes the cradle, the intent is that the students perform the action according to the analysis presented. A specific desired response with no opportunities for decision making is what is expected from the students by the teacher.

### Non-Specific Response

There is no time that a teacher's intent of student response is non-specific if the teacher analyzes the cradle as to how it is performed. The students are given no opportunities for decision making when the teacher explains the mechanics of the cradle as the students are listening and NOT performing.

Example: If the teacher analyzes the cradle, the students are expected to perform the skill exactly

Example: "The motion of the stick is from side to side in a circular fashion in front of your body with the stick kept vertical at all times. Now try it."

according to the analysis. Therefore, there are no opportunities given to the students for decision making.

## MANUAL ASSISTANCE (M)

The teacher attempts to help the student by moving some part of the student's body or by moving the lacrosse stick.

### Specific Response

The teacher physically moves the student's body or parts of the body, or adjusts or moves the lacrosse stick. The intent is that the student perform the action a set way.

Example: The teacher assists a student in the positioning of the stick, fixes the grip by positioning the hands, or moves the student's stick throughout the entire cradling action.

### Non-Specific Response

When the student is working within his own response and the teacher makes a minor adjustment such as touching a body part or lacrosse stick and then immediately withdrawing, the intent of the teacher is that the student continue to work within his own response.

Example: The teacher approaches a student and lifts the student's chin to keep her head up, or pushes the student's elbow in some manner with no prolonged assistance. It is related to what the student was already doing.

## ORGANIZATION (O)

A teacher maneuvers the class in order to organize the students.

### Specific Response

a. The teacher organizes class into some formation or drill. There are no opportunities for decision making.

### Non-Specific Response

a. The teacher organizes the class. There are opportunities for decision making.

Example: "Stand on the line." "Face your partner."

b. The teacher gives directions to equipment that are procedural in nature.

Example: "Tie your crosse." "Put the ball in your crosse."

c. The teacher establishes a cadence or uses a command.

Example: "Cradle, cradle, cradle." "Go!" "Stop!"

Example: "Go anywhere you want to in the gym."

b. The teacher gives directions in reference to equipment that are procedural in nature.

Example: "Pick up the crosse any way you want to."

## REINFORCEMENT (R)

A teacher tells a student his error(s) or praises his performance.

### Specific Response

a. The teacher verbally explains an error in an attempt to correct the error. Such phrases as, "The reason why . . ." or "That happened because . . ." may be used.

Example: "The reason why you're dropping the ball is that you are not using your bottom hand." "You are not coordinating the cradle on the left with your step. As you step on your left foot, cradle to the left."

b. The teacher praises a student's action.

Example: "Good!" "Yes!"

### Non-Specific Response

a. The teacher suggests to find another way or that the student alter his response in some way.

Example: "You don't quite have it . . . try another way."

b. The teacher praises a performance while the student is working within his own response.

Example: "Keep going!" (It is implied that the student is doing well while working within his own response.)

## SPACE (S)

As points of emphasis in the cradle, the teacher refers to level, direction and dimension.

| Specific Response | Non-Specific Response |
|---|---|
| a. The teacher emphasizes level.<br><br>Example: "Cradle the crosse high." | a. The teacher emphasizes level. The intent of the teacher is only evident based upon what he has previously said. When the entire situation is known, it is to be assumed here that the teacher's intent is non-specific.<br><br>Example: "Change levels as you cradle." |
| b. The teacher emphasizes direction.<br><br>Example: "Cradle on your right, now on your left." | b. The teacher refers to direction. The intent of the teacher is only evident based upon what he has previously said. When the entire situation is known, it is to be assumed here that the teacher's intent is non-specific.<br><br>Example: "Run and change directions while moving the crosse." |
| c. The teacher may refer to dimension.<br><br>Example: "Make your cradle big . . . full." | c. The teacher may refer to dimension. The intent of the teacher is only evident based upon what he has previously said. When the entire situation is known, it is to be assumed here that the teacher's intent is non-specific. |

Example: "Keep changing your movements from big to small as you move your crosse."

## BODY PARTS AND BODY ACTIONS (B)

The teacher refers to body parts or body actions as points of emphasis in the cradle.

| Specific Response | Non-Specific Response |
|---|---|
| a. The teacher refers to body parts.<br><br>Example: "Keep your elbow in." "Cradle with your bottom hand." | a. The teacher refers to body parts. The intent of the teacher is only evident based upon what he has previously said. When the entire situation is known, it is to be assumed here that the teacher's intent is non-specific.<br><br>Example: "Move the crosse with one hand." "Put either hand at the bottom of the stick." |
| b. The teacher refers to body actions.<br><br>Example: "Twist to the left." "Bend your right elbow more." | b. The teacher refers to body actions. The intent of the teacher is only evident based upon what he has previously said. When the entire situation is known, it is to be assumed here that the teacher's intent is non-specific.<br><br>Example: "Grasp any part of the crosse." |

## QUALITY OF MOVEMENT (Q)

The teacher refers to speed, force or flow as points of emphasis in the cradle.

| Specific Response | Non-Specific Response |
|---|---|
| a. The teacher refers to speed. | a. The teacher refers to speed. The intent of the teacher is only evident based |

Example: "Run and cradle as fast as you can."

b. The teacher emphasizes force.

Example: "Cradle with your bottom hand as the strong hand."

"Grip the crosse firmly with your left hand.

c. The teacher refers to flow.

Example: "Cradle smoothly from side to side."

"Swing the crosse to your left."

upon what he has previously said. When the entire situation is known, it is to be assumed here that the teacher's intent is non-specific.

Example: "Change speeds as you run and cradle."

b. The teacher emphasizes force. The intent of the teacher is only evident based upon what he has previously said. When the entire situation is known, it is to be assumed here that the teacher's intent is non-specific.

Example: "Make easy movements with the crosse.

c. The teacher refers to flow. The intent of the teacher is only evident based upon what he has previously said. When the entire situation is known, it is to be assumed here that the teacher's intent is non-specific.

Example: "Run and move the crosse continually."

"Keep swinging the crosse as you move."

## RELATIONSHIPS (P)

A teacher states some kind of relationship to a person or object.

### Specific Response

A teacher states a direct relationship to a person or object.

### Non-Specific Response

A teacher infers a relationship to a person or object.

Example: "Pass to the right side of your partner (the pole)."

Example: "Run and come as close to someone (thing) as you can."

## FREEDOM (F)

The teacher allows complete freedom to the students to explore with the equipment. If the teacher states a particular locomotor movement but imparts this as the only restriction on the movements of the students, the locomotor movement is not considered to be a restriction.

### Specific Response

The teacher may desire a specific response and allow the students complete freedom to demonstrate this response.

Example: If the teacher says "Cradle!" with no qualifying statement and has not explained or demonstrated what the cradle is, complete freedom is allowed to the students to show this action. The teacher may enter the class for the first time and say, "Cradle with the lacrosse stick and ball."

### Non-Specific Response

The teacher may allow complete freedom to the students.

Example: "Run and do anything you'd like with the lacrosse stick."

"Run about freely with the crosse."

## QUESTIONS (?)

The teacher asks a question(s) to which a movement response is the answer.

### Specific Response

A teacher asks a question which can be answered in only one way and which has no opportunities for the students to make decisions.

Example: "Can you step on your left foot as you cradle to the left?"

### Non-Specific Response

The teacher asks a question which offers the students opportunities to make decisions when answering.

Example: "Can you cradle at different levels?"

"Can you cradle using different speeds?"

UNCLASSIFIED (X)

Any behavior of the teacher when the cradle is taught that cannot be classified using this system is included in this category.

Figure 1 represents a summary of all individual categories and their appropriate coding symbols.

## RECORDING TECHNIQUE FOR USING THE CATEGORY SYSTEM

In order to use the category system, a specific technique is necessary if the most effective use of the system is expected. The instructions for coding will be presented in two parts: general instructions, and instructions specific to those categories that need special techniques. Figure 2 shows the coding of selected examples of teacher behavior. The instructions presented are identical to those given to the judges trained for this study.

### General Instructions

1. All the behavior of the teacher when he presents any material pertaining to the cradle is recorded using the system.

2. Each time the intent of the teacher changes, a judgment is made and the behavior is recorded in the following way (see Figure 2, examples #1 and #2):

> If the teacher's intent is that the student respond in an exact way with no opportunities for decision making, the teacher behavior is recorded using the system in the area on the coding sheet designated under YES.

| CATEGORIES | SYMBOLS |
|---|---|
| Demonstration | D |
| Analysis | A |
| Manual Assistance | M |
| Organization | O |
| Reinforcement | R |
| Space | S |
| Body Parts and Body Actions | B |
| Quality of Movement | Q |
| Relationships | P |
| Freedom | F |
| Questions | ? |
| Unclassified | X |

FIGURE 1

CATEGORIES AND THEIR CODING SYMBOLS

| CODING EXAMPLES | | EXPLANATION |
|---|---|---|
| YES | NO | |
| SBSSBS | | #1. The intent of the teacher is that the students must perform in only one way with no opportunities for decision making. |
| | B F | #2. The students are allowed opportunity to be responsible for their own behavior. |
| SBS | SB | #3. The intent of the teacher's behavior changed from YES to NO. |
| D | F | #4. The intent of the teacher's behavior changed from NO to YES. |
| DSBSSBS | | #5. Demonstration followed by the verbal explanation of the demonstration. |
| OSSSS | | #6. Cadence (ORGANIZATION) followed by the verbal cadence. |
| OOOO | | #7. Use of the word "cradle" to establish the cadence. |
| ?SBS | | #8. The asking of a question followed by the verbal content of the question. |

FIGURE 2

CODING OF SELECTED EXAMPLES
OF TEACHER BEHAVIOR

Example #1. "Put your left hand on the bottom of the crosse and your right hand at the top of the crosse."

If the teacher's intent is that the student respond in his own way with opportunities for decision making, the teacher's behavior is recorded using the system in the area on the coding sheet designated under NO.

Example #2. "Hold the crosse in any hand. Now run about freely with the crosse."

3. All judgments are coded and placed on successive horizontal lines on the coding sheet so as to maintain sequence of the lesson (see Figure 2, examples #3 and #4):

If the intent of the teacher's behavior changes from YES to NO, the coding proceeds on the same line but in the designated area.

Example #3. "Put your left hand on the bottom of the stick and your right hand anywhere you want to on the stick."

If the intent of the teacher's behavior changes from NO to YES, the following line on the coding sheet is used but the coding proceeds in the designated area.

Example #4. "Run about freely with the crosse. Now as you run, move the crosse like this."

4. All unclear sections of teacher behavior are coded by the symbol ~~~. Those behaviors immediately following such a section are coded as usual.

5. If more than one behavior seems to emerge simultaneously, the behavior which represents the major emphasis is recorded.

6. Each video tape will be shown two times in succession. The teacher behavior is coded using the system the

first time the tape is shown. If any behaviors are knowingly missed, leave a blank space(s) in proper sequence on the coding sheet. The second time the tape is shown, code those behaviors previously missed in the blank space(s) in proper sequence. If at any time during the second viewing a behavior previously recorded is observed as a different behavior, cross out the symbol with a line (/) and code the appropriate symbol above the one crossed out.

Instructions Specific to Those Categories with Special Coding Techniques

The category system is divided into two parts. Twelve categories relate to a teacher's intent of specific response and eleven categories relate to the teacher's intent of non-specific response. One part that involves those teacher behaviors to which the teacher intends a specific response is coded as YES as previously mentioned. The other part includes those teacher behaviors representative of a non-specific response intended by the teacher, coded as NO.

There are three categories in which situations occur that need a different coding technique from the other categories in the system. These categories are: (1) DEMONSTRATION, (2) ORGANIZATION and (3) QUESTIONS. They will be discussed only as their coding techniques differ from the other categories.

1. DEMONSTRATION (see Figure 2, example #5)

When the teacher demonstrates the cradle or parts of it and at the same time verbally describes the demonstration, the symbol D is recorded followed by a sequential categorization of the verbal description. Above all those behaviors that represent the verbal description, draw a line to show those behaviors included in the description.

Example #5. "This is the grip with the left hand at the bottom of the crosse like this and the right hand at the top like this."

2. ORGANIZATION (see Figure 2, examples #6 and #7)

a. When a teacher establishes a cadence, code the symbol O. Following the coding of the symbol O is a categorization of the verbal cadence. Draw a line above those verbal behaviors that represent the cadence.

Example #6. "Left, right, left, right."

b. If the teacher uses the word "cradle" to establish the cadence, code each "cradle" with the coding symbol O.

Example #7. "Cradle, cradle, cradle, cradle."

3. QUESTIONS (see Figure 2, example #8)

When a teacher asks a question to which a movement response is the answer, code the question using the symbol ?. Record the verbal content of the question following the symbol ?. Draw a line above those verbal behaviors that represent the content of the question.

Example #8. "Can you step on your left foot as you cradle to the left?"

## SUMMARY

Chapter 3 presented the rationale underlying the category system, the category system itself and the recording technique necessary for use of the category system. The rationale included the identification of teaching methods and techniques used by physical educators to teach physical skills in general and to beginners in particular. Through an analysis of these methods and techniques, components of a physical education lesson in which the cradle in lacrosse was taught to beginners were identified and defined. Specific references were made to the lacrosse literature and to the personal experience of the investigator. When operationally defined, the components helped formulate the category system which identified and described selected teacher behavior evident in the teaching of the cradle in lacrosse to beginners.

The category system was presented and consisted of 12 categories. Common to all but one of the categories was the concept of teacher's intent of student response. The teacher's intent is specific when students are allowed no opportunities to respond in their own way, and the teacher's intent of student response is non-specific when students are allowed choice as to their own behavioral responses.

The recording techniques necessary for using the system were presented. Included were general instructions

for the effective use of the system and instructions specific to those categories that needed special techniques. Chapter 4 contains the procedures used to estimate the reliability, objectivity and validity of the category system.

# Chapter 4

## PROCEDURES

The purpose of this study was to develop and test a tool for the systematic observation of selected teacher behavior evident in teaching the cradle in lacrosse to beginners. The rationale underlying the system, the category system itself and the recording technique necessary for its use were presented in Chapter 3. The purpose of Chapter 4 is to describe the procedures used to estimate the objectivity, reliability and validity of the system.

## COLLECTION OF DATA

The data used to calculate objectivity, reliability and construct validity were the coded observations of three video taped lessons by three trained judges. The collection of data included: selection of teachers and subjects to be video taped, selection of content to be used by the teachers, technical procedures for video taping, schedule for making video tapes, training of judges and the procedures used for the final observation and recording sessions.

### Selection of Teachers and Subjects

Three teachers were asked to teach the cradle for approximately 20 minutes. Two graduate students and one

faculty member from The University of North Carolina at Greensboro, School of Health, Physical Education and Recreation were chosen during the summer session of 1970. Each of the teachers had taught lacrosse for at least five years. Two of the teachers knew nothing about the study or its purpose. One teacher was familiar with the category system and its purpose. Although this teacher was actually a biased subject, her approach to teaching the cradle, as previously observed by the investigator, was somewhat unique. For this reason, and also because of her reputation and experience as a lacrosse teacher and player, this teacher was asked to participate in this study.

Graduate students attending the summer session of 1970 at The University of North Carolina at Greensboro, School of Health, Physical Education and Recreation were asked to volunteer as subjects for the study. The students were told that they would participate in a lesson in lacrosse and they were not to have had any previous lacrosse experience. Of those asked, 18 students volunteered. All were females.

The subjects were divided at random into three groups with six in each group. None of the subjects were familiar with the study or any aspects of it.

## Selection of Content

The category system developed in this study was designed to describe selected teacher behavior used in

teaching the cradle in lacrosse to beginners. To insure that the lessons to be video taped were within this context, each teacher was asked to teach only the cradle to subjects that had had no previous experience in lacrosse.

## Video Taping Procedures

The video taping procedures in this study included: (1) Selection of equipment, (2) Selection of area and layout, (3) Taping technique, (4) Development of a schedule for video taping, and (5) Inspection of tapes.

Selection of equipment. The equipment used was: a Sony VCK 2400 camera with zoom lens, a Sony microphone with an 82 foot cord, a Sony Videocorder CV 2000 portable pack, a Sony monitor-television receiver CVM-920U with a 10 inch screen and one with a 21 inch screen and 3 Sony Video Tapes, V-30D. The equipment was the property of the School of Health, Physical Education and Recreation at The University of North Carolina at Greensboro.

Selection of area and layout. After much experimentation with equipment and different locations, plans for the video taping layout were established. The following criteria served as guidelines for the development of the layout:

1. The teacher's verbal behavior must be audible at all times.

2. The image of the teacher must be in view whenever possible so that her non-verbal behavior could be observed.

3. If the teacher approached an individual student, the image of the teacher and student must be in view in order that the teacher's and student's behavior could be observed.

The following layout was developed:

1. The area selected to have the lacrosse lessons taught was the Rosenthal Gymnasium at The University of North Carolina at Greensboro. The movements of the teacher were restricted to an area measuring 70 feet by 50 feet in dimension. These dimensions were established so that the teacher's verbal behavior could be recorded by means of a suspended microphone and her non-verbal behavior could be accurately filmed.

2. The video taping camera and portable pack were situated in the far northwest corner of the balcony of the gymnasium. The investigator stood on top of a chair which was on top of a desk so that as much of the gymnasium area as possible could be viewed and filmed. The microphone was hung down 10 feet from a gymnastic climbing rope which was suspended on one end from the rafters of the gymnasium and on the other by a restraining rope. The microphone was centrally located above the area where the lessons were taught approximately 20 feet from the floor (see Figure 3).

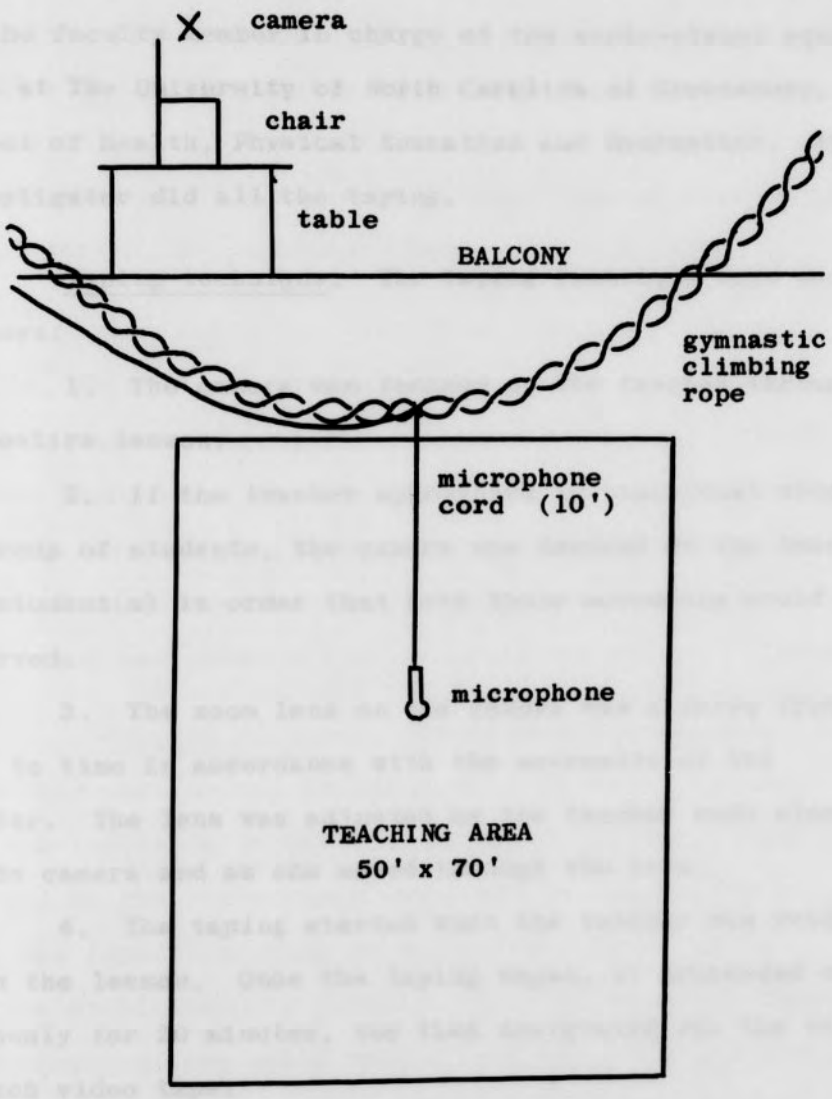


**FIGURE 3**

**VIDEO TAPING LAYOUT**

The investigator was taught to use all the equipment by the faculty member in charge of the audio-visual equipment at The University of North Carolina at Greensboro, School of Health, Physical Education and Recreation. The investigator did all the taping.

Taping technique. The taping technique used was as follows:

1. The camera was focused on the teacher throughout the entire lesson.

2. If the teacher approached an individual student or group of students, the camera was focused on the teacher and student(s) in order that both their movements could be observed.

3. The zoom lens on the camera was altered from time to time in accordance with the movements of the teacher. The lens was adjusted as the teacher came closer to the camera and as she moved through the area.

4. The taping started when the teacher was ready to begin the lesson. Once the taping began, it proceeded continuously for 20 minutes, the time designated for the length of each video tape.

From June 1, 1970 to June 18, 1970, experimentation was done with the position of the taping equipment in order to establish the best angle of viewing the teacher, time of day and the situation of the microphone so that all the

verbal behavior of the teacher could be recorded. Because of a glare from sunlight from side windows of the gymnasium, the time of day for taping was an important factor in the quality of tapes. The best time for taping was determined to be between 5:00 p.m. and 6:30 p.m. During this experimental period, no permanent video tapes were made.

Taping schedule. The first final tape was made on June 18, 1970 from 5:10 p.m. to 5:30 p.m. The second final tape was made on August 12, 1970 from 5:00 p.m. to 5:20 p.m. and the third final tape was made on August 12, 1970 from 5:30 p.m. to 5:50 p.m. These three tapes were those viewed by the trained judges in order to establish the objectivity, reliability and construct validity of the category system.

Inspection of tapes. Three specially-prepared video tapes were made by the investigator. In order to insure that the teacher's verbal and non-verbal behavior were recorded on the video tapes and could be clearly heard and seen, two faculty members at The University of North Carolina at Greensboro, School of Health, Physical Education and Recreation were asked to evaluate each tape. After having viewed the tapes, the two faculty members agreed that the teacher's verbal behavior was audible and that the image of the teacher could be seen at all times. All three of the video tapes met the criteria that served as guidelines for

the video taping layout. The investigator did not see or hear any of the behavior recorded on the specially-prepared video tapes until a year later.

Training of Judges

Three graduate students, enrolled at The University of North Carolina at Greensboro, School of Health, Physical Education and Recreation volunteered in July, 1971, for training in the use of the category system. It was considered appropriate for the investigator to act as a judge since the time between the making of the tapes and the viewing of the tapes was one year and she had never seen nor heard the tapes. None of the volunteers had had experience in the use of category systems. All three had varying amounts of teaching experience and had either played lacrosse or had had some experience in either teaching or coaching the sport.

Various techniques were used in training the judges. Several audio tapes of actual lacrosse lessons were prepared by the investigator and by other teachers to be used as training tapes. The audio tapes were played during the training sessions, and the teacher's verbal behavior was coded using the category system.

A live teaching situation was also used during the training period. Observing the live performance gave the judges opportunity to code the non-verbal behavior of the teacher as well as her verbal behavior.

One practice video tape was made for the training period and was approximately 12 minutes in length. Further video taping for the purpose of training the judges could not be done due to mechanical difficulties relating to the camera. Consequently, the observers practiced on only one video tape. At no time did any of the judges practice using the system on the final video tapes made by the three teachers taking part in this study.

Six training sessions were held in total. Each session was held from 2:00 p.m. to approximately 4:30 p.m. beginning on Thursday, July 8, 1971. They ended on Wednesday, July 14, 1971. During these sessions the judges learned the individual categories of the system, the coding techniques and the system for recording. Several changes and additions were made to the category system during the first two sessions of training. Throughout these sessions the codings of the three judges were continuously compared. When it was thought that all the judges were consistent with each other and themselves, the data were collected using the specially-prepared video tapes.

Recording Sessions

Two sessions were scheduled at which time the judges viewed and coded the specially-prepared video tapes. The recording sessions were held in Room 27 at the Coleman Gymnasium at The University of North Carolina at Greensboro.

The necessary playback equipment was supplied for both sessions by the School of Health, Physical Education and Recreation of The University of North Carolina at Greensboro.

The equipment was situated in the room so that optimum viewing and hearing were possible. The television monitor was situated 10 feet from the observers and placed at eye-level. The observers sat facing the monitor two to three feet apart from each other and viewed the tapes simultaneously. They recorded their observations separately.

The first viewing session was held on July 14, 1971 from 3:00 p.m. to 6:00 p.m. Each of the three video tapes was viewed in its entirety twice. The second viewing of the same tape immediately followed the first viewing of that tape. The purpose of the second viewing of each tape was two-fold: (1) to check the original recordings, and (2) to add to those observations missed during the first viewing. The observations were recorded on the coding sheets provided.

The second viewing session was held on July 19, 1971 from 3:00 p.m. to 6:00 p.m. Five days had elapsed between the first viewing sessions. The same procedures used for the first session were followed at the second session. However, a different television monitor was used to view the tapes because of mechanical difficulties with the original monitor. A smaller screen was used during the second

session. This monitor was also faulty, and at times the teacher's verbal behavior was inaudible.

At both sessions, all the tapes were viewed consecutively twice through. At both sessions the order of tapes to be viewed was determined randomly. The data gathered at these sessions were used to determine the objectivity, reliability and construct validity of the category system. Content validity was estimated through a careful analysis of the lacrosse literature.

## TREATMENT OF DATA

The coded observations of the three trained judges served as the data used to determine the objectivity, reliability and construct validity of the system. Content validity of the system was estimated through a careful analysis of the lacrosse literature.

### Objectivity

Objectivity was determined by examining the question: to what extent can different trained judges agree upon what they see and hear when observing and recording the same video taped lessons (Barrett, 1969:148-149)? The recorded observations of each judge were compared with the recorded observations of every other judge (AB, AC, BC). Objectivity coefficients were computed using the Pearson product-moment correlation technique (Guilford, 1965:97).

## Reliability

Reliability was estimated by examining the question: to what extent can each trained judge agree with what he observed at an earlier time (Barrett, 1969:150)? To determine reliability, the recorded observations of each judge from the three video tapes viewed during the first session and the observations recorded from the same three video tapes seen five days later during the second session were used. Reliability coefficients were computed using the Pearson product-moment correlation technique (Guilford, 1965:97).

## Validity

In determining the validity of the category system, construct and content validity were determined. Construct validity was estimated by examining two questions: (1) are all teacher behaviors as defined by the category system observed in the video taping lesson, and (2) can all the teacher behaviors observed be categorized (Barrett, 1969: 151)?

In answering the first question, the recorded observations of all three video tapes were analyzed to determine whether all the categories were used and by how many judges. In attempts to answer the second question, the number of Xs (UNCLASSIFIED) were identified in regard to

how many times the symbol X was recorded and by how many judges.

Content validity was estimated by examining the following question: are the categories as operationally defined in the system representative and comprehensive of a physical education lesson involving the teaching of the cradle in lacrosse to beginners (Barrett, 1969:152)? In answering this question, the literature pertaining to the teaching of the cradle in lacrosse was carefully examined.

## Summary

Chapter 4 presented the procedures necessary for estimating objectivity, reliability and construct and content validity. The following procedures were described in collecting the data needed to make these calculations: selection of teachers and subjects, selection of content, video taping procedures, training of the judges and devising a schedule for the final observations and recording sessions.

The statistical techniques used for determining objectivity, reliability and construct validity were presented. Content validity was estimated through a careful analysis of the lacrosse literature.

# Chapter 5

## PRESENTATION AND ANALYSIS OF DATA

The category system in this study was designed to describe selected teacher behavior evident in teaching the cradle in lacrosse to beginners. Various methods and techniques used by physical educators to teach physical skills to beginners were identified and explained. Using as a basis the literature relevant to the teaching of physical skills to beginners and to the teaching of the cradle to beginners, components of a physical education lesson were identified. Inherent within each component was the concept of teacher's intent of student response, that it may be specific or non-specific. The teacher's intent was considered to be specific when the students were not allowed any opportunities for decision-making and non-specific when the students were allowed some opportunity for decision-making. The coded observations of three trained observers viewing three specially-prepared video tapes of experienced teachers teaching the cradle to beginners were the data used to estimate the objectivity, reliability and validity of the category system.

The procedures for collecting the data necessary for estimating objectivity, reliability and validity were

presented in Chapter 4. Chapter 5 deals with the presentation and analysis of data.

The Pearson product-moment correlation technique was used to obtain coefficients for objectivity and reliability (Guilford, 1966:97). To further analyze these coefficients, reference to each obtained was compared to standards devised by Weber and Lamb (1970:63). They are as follows:

| | | | |
|---|---|---|---|
| 0 | ≤ r ≤ | .19 | - a slight correlation |
| .20 | ≤ r ≤ | .39 | - a low correlation |
| .40 | ≤ r ≤ | .69 | - a modest correlation |
| .70 | ≤ r ≤ | .89 | - a high correlation |
| .90 | ≤ r ≤ | 1.00 | - a very high correlation |

A standard for the correlation coefficients was set at .90 by the investigator in accepting or rejecting the system as being objective and reliable. This standard was chosen because it represents a "very high" correlation coefficient of both objectivity and reliability as shown by Weber and Lamb (1970:63).

The coefficients obtained for objectivity and reliability, in order to show statistical significance, were compared at the .05 level of confidence. This standard was chosen arbitrarily by the investigator in light of the sample selected. The data used to obtain objectivity, reliability and validity are presented and analyzed in this chapter.

## OBJECTIVITY

As presented in Chapter 3, the category system is divided into two parts, SPECIFIC and NON-SPECIFIC. The SPECIFIC part contained 12 categories, and the NON-SPECIFIC part contained 11 categories. Estimation of objectivity was accomplished by pairing each judge with every other judge (AB, AC, BC). Objectivity of the system will be examined first by the SPECIFIC part, then by the NON-SPECIFIC part and then by a combination of both parts.

### Specific Part

For the SPECIFIC part of the category system with 11 degrees of freedom, a correlation coefficient of .553 was required to reach significance at the .05 level of confidence (Guilford, 1965:580). The correlation coefficients for objectivity for all pairings of judges are presented in Table I. The results are examined first by individual tapes and then by a combination of the total observations for all three tapes.

The results, as identified in Table I, show correlation coefficients for objectivity between judges AB, AC and BC on Tape #1 ranging from .991 between judges A and B to .998 for judges B and C. Tape #2 shows coefficients ranging from .987 for judges A and B to .999 for judges B and C. From both tapes then, the pairings of judges AB showed the

lowest correlation and judges BC showed the highest correlation.

TABLE I

OBJECTIVITY CORRELATIONS FOR PAIRED JUDGES AB, AC AND BC FOR SPECIFIC PART

| Tapes | Judge Pairings | | |
|---|---|---|---|
| | AB | AC | BC |
| #1 | .991* | .995* | .998* |
| #2 | .987* | .989* | .999* |
| #3 | .407 | .731* | .865* |
| #1,#2,#3 | .969* | .980* | .997* |

*An r of .553 was required for significance at the .05 level of confidence.

Examining the results of Tape #3, when judge A was paired with judge B, a coefficient of .407 was obtained. When judge A was paired with judge C, a coefficient of .731 was found. The correlation of judge B paired with judge C showed the highest coefficient of .865. The lowest coefficient was found when judge A was paired with judge B. When examining all three tapes combined, coefficients ranged from .969 between judges A and B to .997 with judges B and C paired. Again, as the calculations indicate, judges AB showed the lowest correlation and judges BC showed the highest.

At the .05 level of confidence, 11 correlations were found to be statistically significant. One correlation, the pairing of judges AB on Tape #3, showed no statistical significance at the .05 level of confidence.

Non-Specific Part

For the NON-SPECIFIC part of the category system with 10 degrees of freedom, a correlation coefficient of .576 was required to reach significance at the .05 level of confidence (Guilford, 1965:580). The data in the NON-SPECIFIC part of the category system were treated in the same manner as that in the SPECIFIC part. The judges were paired and the Pearson product-moment correlation technique was used. The correlation coefficients for objectivity for all pairings of judges are presented in Table II. The results are examined first by individual tapes and then by a combination of the total observations for all three tapes.

The results of Tape #1 showed a correlation coefficient of .646 when judge A was paired with judge B and .600 when judge A was paired with judge C. However, when judges B and C were paired, a coefficient of .948 was obtained. The lowest correlation was between judges AC and the highest was between judges BC.

TABLE II

OBJECTIVITY CORRELATIONS FOR PAIRED JUDGES AB, AC AND BC FOR NON-SPECIFIC PART

| Tapes | Judge Pairings | | |
|---|---|---|---|
| | AB | AC | BC |
| #1 | .646* | .600* | .948* |
| #2 | .479 | .585* | .884* |
| #3 | .698* | .501 | .903* |
| #1,#2,#3 | .538 | .414 | .911* |

*An r of .567 was required for significance at the .05 level of confidence.

Tape #2 showed a correlation coefficient of .479 between judges A and B, and a coefficient of .585 between judges A and C. However, between judges B and C, a coefficient of .884 was obtained. Judges AB showed the lowest.

The results from Tape #3 showed somewhat different findings. The lowest correlation was between judges A and C with a coefficient of .501. The pairing of judges AB yielded a coefficient of .698. Judges BC again showed the highest correlation coefficient of .903 when paired.

Examining the combination of Tapes #1, #2 and #3, the lowest correlation was shown to be between judges A and C resulting in .414. Judges AB when paired showed a correlation coefficient of .538 for the total tapes. When judge B was paired with judge C, the highest correlation was obtained with .911.

At the .05 level of confidence, all the results for individual tapes and for total tapes showed to be statistically significant for judges B and C when paired together. Judges AB showed to be statistically significant at the .05 level on Tape #1 and Tape #3. Judges AC were significant at the .05 level on Tape #1 and Tape #2. From a total of 12 correlations in this section, four were not statistically significant. On Tape #2 judges AB were not significant, on Tape #3 judges AC were not significant, and on total Tapes #1, #2 and #3 judges AB and AC showed no statistical significance at the .05 level of confidence.

Specific and Non-Specific Parts Combined

To show the objectivity of the entire category system, that is both SPECIFIC and NON-SPECIFIC parts combined, the recordings of each judge for both parts were combined. The number of recordings for each category reflected how many times each category was used during the first session of viewing all tapes. The judges were paired with every other judge and the Pearson product-moment coefficient of correlation was used to determine the objectivity of the system as a whole. The results of the individual tapes and all three tapes combined are presented in Table III.

The results of combining the data for the two sections SPECIFIC and NON-SPECIFIC showed correlation coefficients ranging from .943 for judges AC on Tape #3 to .998

for judges BC on Tape #1. In order to be significant at the .05 level of confidence with 11 degrees of freedom, a correlation coefficient of .553 was required (Guilford, 1965: 580). All the correlation coefficients for objectivity, as presented in Table III, are statistically significant at the .05 level.

TABLE III

OBJECTIVITY CORRELATIONS FOR PAIRED JUDGES AB, AC AND BC FOR SPECIFIC AND NON-SPECIFIC PARTS COMBINED

| Tapes | Judge Pairings | | |
|---|---|---|---|
| | AB | AC | BC |
| #1 | .989* | .995* | .998* |
| #2 | .987* | .992* | .996* |
| #3 | .986* | .943* | .949* |
| #1,#2,#3 | .965* | .989* | .991* |

*An r of .553 was required for significance at the .05 level of confidence.

## Discussion

The category system will be examined first by each part, SPECIFIC and NON-SPECIFIC. Then, a look at the system as a whole is presented.

Specific part. Looking at the results in Table I (see page 93) which identified correlation coefficients for the SPECIFIC part of the category system, the standard of

acceptance of .90 was reached on several tapes. A coefficient of at least .965 was obtained for Tapes #1, #2 and total Tapes #1, #2 and #3 for all pairings of judges. On Tape #3, however, the highest correlation obtained was .865 reaching the standard for a high correlation for the pairing of judges BC. The pairing of judge A with judges B and C showed coefficients of .407 between judges AB and .731 between AC, both unacceptable coefficients for this study. This demonstrated that judge A did not agree with B and C to the extent that judges B and C did when paired.

The findings of Tape #3 seemed to indicate that the trained observers had difficulty agreeing on what they observed on this particular tape. The judges admitted after the final viewing of all the tapes that Tape #3 was very difficult to code in regard to the teacher's intent of response. They also acknowledged that the fact this teacher, who was known to encourage students in the decision-making process, was teaching the lesson, influenced their coding of her tape. The fact that not as much agreement was reached between the judges on Tape #3 as on the other two tapes was evident in the low correlations obtained.

In summary, since such high correlations were reached by all the judges on Tape #1, Tape #2 and total Tapes #1, #2 and #3, the SPECIFIC part of the category system appeared to be an objective measure of identifying teacher behavior when the teacher's intent was that a

specific response be demonstrated by the students. The standard for objectivity of .90 was reached by all pairings of judges on Tape #1, Tape #2 and total Tapes #1, #2 and #3.

Non-specific part. The NON-SPECIFIC part of the category system was used to code those teacher behaviors evident when a non-specific response was the intent of the teacher. This concept involves allowing students opportunities to be responsible for their own behavior. Table II (see page 95) presented the correlation coefficients obtained by the pairings of judges for the three tapes.

In examining the results presented in Table II, it seemed apparent that the standard of .90 for acceptance of the system was attained only by judges BC on Tape #1, Tape #3 and total Tapes #1, #2 and #3. On Tape #2 a coefficient of .884 was attained with judges BC which approaches the standard of .90. On all the tapes the results show unacceptable coefficients whenever judge A was paired with the other two judges. Looking at the results, it seemed judge A had a certain amount of difficulty in coding those teacher behaviors defined as non-specific. A reason for this may be attributed to judge A's lack of understanding of the concept of teacher's intent and also to the fact of insufficient training in the identification of this concept.

From the results shown in Table II, it is apparent that the judges had considerable difficulty in agreeing with

what they observed. There is an indication that only the pairing of judges BC was able to achieve the standard of .90 and only on Tape #1, Tape #3 and total Tapes #1, #2 and #3. The low correlations obtained perhaps can be attributed to the background and experience of the trained judges and also to the lack of sufficient training of the judges in identifying the teacher's intent of a non-specific response. Unlike the SPECIFIC part of the system, the NON-SPECIFIC part is weaker as an objective measure of identifying and describing teacher behavior evident in the teaching of the cradle in lacrosse to beginners.

Specific and non-specific parts combined. Table III (see page 97) presented the correlations for the category system as a whole. The recordings of the judges for both parts of the system were combined to show how much agreement each judge, paired with every other judge, could attain.

The results presented in Table III showed that the standard of .90 was reached by all pairings of judges for all individual tapes and for the three tapes combined. When perceiving the category system as a whole, that is combining the SPECIFIC and NON-SPECIFIC parts, the results imply that the judges could agree upon recording the behaviors that were observed. Hence, the category system as a whole appears to be an objective measure of identifying and describing teacher behavior evident in the teaching of the

cradle to beginners. However, looking at both parts of the system separately, when the judges had to decide upon the intent of the teacher, if the teacher's intent was specific, it could be identified more objectively than when a teacher's intent was non-specific.

## RELIABILITY

In estimating reliability, the coded observations of one judge(s) during the first session of viewing the tapes were compared with the coded observations of the same judge(s) viewing the same tapes during the second session. This session occurred five days later. The Pearson product-moment correlation technique was used to determine this reliability. As previously mentioned, a correlation coefficient of .553 was required to reach statistical significance at the .05 level of confidence for the SPECIFIC part, and .576 was required for the NON-SPECIFIC part. The same standards as presented by Weber and Lamb (1970:63) were used to further analyze the correlation coefficients for reliability (see page 91).

### Specific Part

The correlation coefficients for reliability for the SPECIFIC part of the category system for all judges are presented in Table IV. The results are examined by individual tapes and also by a combination of the total number of observations for each judge for all three tapes.

TABLE IV

RELIABILITY CORRELATIONS FOR JUDGES A, B AND C FOR SPECIFIC PART

| Tapes | Judges | | |
|---|---|---|---|
| | A | B | C |
| #1 | .993* | .999* | .999* |
| #2 | .997* | .996* | .999* |
| #3 | .982* | .871* | .802* |
| #1,#2,#3 | .995* | .999* | .992* |

*An r of .553 was required for significance at the .05 level of confidence.

The results of Tape #1 showed a coefficient for judge A of .993 and judges B and C of .999. Tape #2 indicated coefficients ranging from .996 for judge B to .999 for judge C. The reliability coefficients of Tape #3 showed judge A with .982, judge B with .871 and judge C with .802. In examining the coefficients for the total Tapes #1, #2 and #3, judge B showed the highest with .999 and judge C showed the lowest with .992.

All the recordings from the judges for the tapes examined individually and examined as a total for reliability showed correlation coefficients that were statistically significant at the .05 level of confidence. As mentioned earlier, for the SPECIFIC part of the category system with

11 degrees of freedom, a coefficient of .553 was required to reach significance at the .05 level of confidence.

Non-Specific Part

The data in the NON-SPECIFIC part of the category system were treated statistically in the same manner as that in the SPECIFIC part. The correlation coefficients for reliability are presented in Table V and are analyzed first by individual tapes and then by the combination of the three tapes.

TABLE V

RELIABILITY CORRELATIONS FOR JUDGES A, B AND C FOR NON-SPECIFIC PART

| Tapes | Judges | | |
|---|---|---|---|
| | A | B | C |
| #1 | .268 | .919* | .971* |
| #2 | -.100 | .883* | .983* |
| #3 | .890* | .997* | .996* |
| #1,#2,#3 | .644* | .996* | .995* |

*An r of .576 was required for significance at the .05 level of confidence.

On Tape #1 judge C had the highest coefficient of .971. Judge B had .919. Judge A had the lowest coefficient of .268. The results of Tape #2 showed judge C with the highest reliability coefficient of .983. Judge B had a

coefficient of .883, and judge A had a negative coefficient of reliability, -.100. For Tape #3 judge B showed the highest coefficient with .997. Judge C had .996 and judge A had .890. For the combination of Tapes #1, #2 and #3, judge B had .996, judge C had .995 and judge A had .664 as coefficients of reliability.

At the .05 level of confidence, the reliability coefficients of judges B and C for all the tapes were statistically significant. Judge A on Tape #1 and Tape #2 had coefficients that were not significant at the .05 level. On Tape #3 and a combination of Tapes #1, #2 and #3, judge A showed statistically significant reliability correlation coefficients.

Specific and Non-Specific Parts Combined

To show the reliability of the category system as a whole, that is both SPECIFIC and NON-SPECIFIC parts combined, the recordings of each judge from the first session for each tape were combined. This was repeated with the recordings from the second session of viewing the same video tapes five days later. The coded observations from the first session for each judge and those from the second session for each judge were compared by using the Pearson product-moment correlation technique. The reliability coefficients for both parts of the category system are presented in Table VI. The results for individual tapes and for all three tapes combined are presented.

TABLE VI

RELIABILITY CORRELATIONS FOR JUDGES A, B AND C FOR SPECIFIC AND NON-SPECIFIC PARTS COMBINED

| Tapes | Judges | | |
|---|---|---|---|
| | A | B | C |
| #1 | .992* | .999* | .997* |
| #2 | .996* | .993* | .999* |
| #3 | .977* | .992* | .975* |
| #1,#2,#3 | .998* | .998* | .996* |

*An r of .553 was required for significance at the .05 level of confidence.

Combining the data for both parts of the category system, SPECIFIC and NON-SPECIFIC, reliability coefficients ranged from .975 for judge C on Tape #3 to .999 for judge B on Tape #1. In order to be statistically significant at the .05 level, .553 was needed for 11 degrees of freedom. All the correlation coefficients for reliability as presented in Table VI were statistically significant at the .05 level of confidence.

Discussion

Reliability of the system was determined by comparing the observations recorded the first time for each tape by each judge(s) with those recorded the second time from the same tapes by the same judge(s). The reliability

coefficients of the SPECIFIC part, the NON-SPECIFIC part and both parts combined will be discussed. Further attention will be given to selected individual tapes.

Specific part. Table IV (see page 102) presented the results obtained for reliability coefficients for the SPECIFIC part of the category system. The standard of acceptance for reliability of the system was the same as that set for objectivity in this study, .90. All three judges had very high coefficients of reliability on Tape #1, Tape #2 and total Tapes #1, #2 and #3. On Tape #3 judge A was able to agree with what she observed the first and second times more than could judges B or C as was evidenced by the coefficient of .982 obtained. Judges B and C obtained coefficients on Tape #3 that were .871 and .802 respectively. However, these coefficients did not reach the standard for acceptance set at .90. On total Tapes #1, #2 and #3 this standard was attained.

Non-specific part. Reliability correlation coefficients were presented in Table V (see page 103) for the NON-SPECIFIC part of the category system. The reliability coefficients obtained for judges B and C for the NON-SPECIFIC part of the system attained the standard of .90 on Tape #1, Tape #3 and total Tapes #1, #2 and #3. Tape #2 showed judge C with a very high coefficient of .983 reaching the standard of acceptance and judge B with .883 approaching

the standard. Judge A, however, had coefficients that were extremely low on Tape #1, Tape #2 and Tapes #1, #2 and #3. This showed that judge A could not consistently agree with herself on what she observed between the first and second sessions of viewing the same tapes and using the NON-SPECIFIC part of the system.

Concerning the negative correlation coefficient, -.100, obtained by judge A on Tape #2, an examination of the raw data will be discussed. Table VII presents the data.

TABLE VII

NUMBER OF ENTRIES PER CATEGORY FOR JUDGES A, B AND C FOR TAPE #2 FOR NON-SPECIFIC PART

| Category | Judge A Viewing 1 | Judge A Viewing 2 | Judge B Viewing 1 | Judge B Viewing 2 | Judge C Viewing 1 | Judge C Viewing 2 |
|---|---|---|---|---|---|---|
| Demonstration(D) | 0 | 0 | 1 | 1 | 0 | 0 |
| Body Parts(B) | 0 | 0 | 4 | 3 | 2 | 2 |
| Space(S) | 0 | 2 | 6 | 4 | 5 | 6 |
| Organization(O) | 0 | 0 | 5 | 5 | 2 | 2 |
| Quality(Q) | 0 | 0 | 0 | 2 | 2 | 2 |
| Manual Assistance(M) | 0 | 0 | 1 | 1 | 0 | 0 |
| Reinforcement(R) | 0 | 0 | 6 | 6 | 5 | 5 |
| Relationships(P) | 0 | 0 | 0 | 0 | 0 | 0 |
| Freedom(F) | 2 | 0 | 6 | 3 | 5 | 7 |
| Questions(?) | 0 | 0 | 1 | 1 | 0 | 0 |
| Unclassified(X) | 0 | 0 | 0 | 0 | 0 | 0 |

During the first session of viewing, the category FREEDOM (F) was the only category used, and during the second session the category SPACE (S) was the only category

used. Although judge A was not consistent in the use of these two categories, she was consistent in the use of the others. The non-use of a category means either: (1) a judge saw an illustration of a behavior that could be classified in one of the categories and did not code this behavior properly, or (2) a behavior was not observed according to these categories so that no coding actually was required. Perhaps then, judge A did not observe any behaviors that could be coded in the NON-SPECIFIC part of the system on Tape #2. The zeros then represent full agreement in those categories not used. This, however, does not eliminate the fact that the other two judges did use some of the categories not used by judge A on Tape #2.

As mentioned earlier, perhaps because of her lack of understanding the concept of teacher's intent and also because of the lack of sufficient training, the reliability coefficients for judge A showed to be unacceptable and disappointingly low. Because judge A was not reliable, perhaps this is an indication for the low coefficients of objectivity attained when judge A was paired with judges B and C in the NON-SPECIFIC part.

Specific and non-specific parts combined. Table VI (see page 105) presented the reliability coefficients of the system as a whole. It is evident that very high coefficients were obtained by all three judges on individual tapes and

when all the tapes were combined. The results show the standard of .90 easily surpassed. The judges demonstrated that they could agree on what was observed and recorded using the system.

## VALIDITY

Validity of the system was ascertained through estimating construct and content validity. Construct validity will be examined first by the SPECIFIC part, then by the NON-SPECIFIC part and then by a combination of the SPECIFIC and NON-SPECIFIC parts.

### Construct Validity

Construct validity was estimated by examining the questions: (1) are all teacher behaviors as identified by the category system observed in the video taped lessons and (2) can all teacher behaviors observed be categorized? Table VIII shows the total number of times each category was used. The total number of entries was calculated from the recorded observations during the first session only.

Specific part. In estimating if all the teacher behaviors as identified by the system were observed in the taped lessons, Table VIII showed that all the categories were used except one, FREEDOM(F). The judges did not at any time observe any teacher behavior that could be classified in this category.

TABLE VIII

TOTAL NUMBER OF ENTRIES PER CATEGORY FOR SPECIFIC PART, NON-SPECIFIC PART AND BOTH PARTS COMBINED

| Category | Specific | Non-Specific | Specific and Non-Specific Combined |
|---|---|---|---|
| | Number | Number | Number |
| Demonstration(D) | 116 | 16 | 132 |
| Body Parts(B) | 230 | 49 | 279 |
| Space(S) | 434 | 123 | 557 |
| Organization(O) | 122 | 75 | 197 |
| Quality(Q) | 54 | 98 | 152 |
| Manual Assistance(M) | 39 | 10 | 49 |
| Analysis(A) | 8 | -* | 8 |
| Reinforcement(R) | 187 | 125 | 312 |
| Relationships(P) | 1 | 0 | 1 |
| Freedom(F) | 0 | 25 | 25 |
| Questions(?) | 17 | 8 | 25 |
| Unclassified(X) | 0 | 0 | 0 |

*This category was not included in the NON-SPECIFIC part.

If any of the behavior observed could not be categorized, the category UNCLASSIFIED(X) was to be used. Table VIII showed that this category was not used by any of the judges.

Non-specific part. Reviewing the recordings made in the NON-SPECIFIC part of the system, only one category was not used by any of the judges, RELATIONSHIPS(P). The category ANALYSIS(A), as described in the presentation of the system, was not included in the NON-SPECIFIC part. All

other categories were used at least eight times as shown in Table VIII.

The category to be used by the judges when a behavior observed could not be classified was UNCLASSIFIED(X). As can be seen in Table VIII, this category was not used by any of the judges.

Specific and non-specific parts combined. Perceiving the system as a whole as shown in Table VIII, all the categories were used. The category UNCLASSIFIED(X) was never used, showing that all the behavior observed could be categorized using the system.

## Content Validity

Content validity was estimated through a careful analysis of the lacrosse literature as to the comprehensiveness and representativeness of the system as it related to the teaching of the cradle to beginners. As presented in Chapter 3 of this investigation, the components of a physical education lesson were identified and when operationally defined, helped formulate the categories of the category system. Reference to each component was made to the lacrosse literature. Since it was evident that each category of the system and the examples given could be specifically supported in the lacrosse literature reviewed, content validity of the category system was assumed.

Discussion

As mentioned earlier, construct validity was determined by examining if all the behaviors identified by the system could be observed on the video tapes, and if those behaviors observed could be categorized. Table IX presents the total number of times each category was used in the SPECIFIC part, the NON-SPECIFIC part and in both parts combined by each judge from the first session of viewing only.

Specific part. In examining Table IX, it is apparent that all the categories were used by the judges in the SPECIFIC part except the category FREEDOM(F). As mentioned in the category system in Chapter 3, the only time the category FREEDOM(F) would be coded in the SPECIFIC part was when the teacher expected a specific response, but allowed the students complete freedom to demonstrate this response. The example given was: The teacher, during the first class in lacrosse, begins the lesson by saying, "Cradle!" with no qualifying statement. This example of behavior is perhaps unlikely to be used by experienced teachers in lacrosse. However, there is a possibility that literature could have been distributed earlier to the students concerning the cradle and the teacher could say this. Since this possibility, however slight, does exist, the category FREEDOM(F) was included in the SPECIFIC part of the category system.

TABLE IX

TALLIES FOR JUDGES A, B AND C FOR TOTAL TAPES FOR SPECIFIC PART, NON-SPECIFIC PART AND SPECIFIC AND NON-SPECIFIC COMBINED

| Category | Specific | | | Non-Specific | | | Specific and Non-Specific Combined | | |
|---|---|---|---|---|---|---|---|---|---|
| | Judge | | | Judge | | | Judge | | |
| | A | B | C | A | B | C | A | B | C |
| Demonstration(D) | 33 | 39 | 44 | 1 | 14 | 1 | 34 | 53 | 45 |
| Body Parts(B) | 72 | 77 | 81 | 4 | 31 | 14 | 76 | 108 | 95 |
| Space(S) | 153 | 130 | 151 | 10 | 71 | 42 | 163 | 201 | 193 |
| Organization(O) | 36 | 40 | 46 | 18 | 47 | 10 | 54 | 87 | 56 |
| Quality(Q) | 20 | 14 | 20 | 12 | 47 | 39 | 32 | 61 | 59 |
| Manual Assistance(M) | 14 | 9 | 16 | 0 | 10 | 0 | 14 | 19 | 16 |
| Analysis(A) | 4 | 2 | 2 | 0 | 0 | 0 | 4 | 2 | 2 |
| Reinforcement(R) | 83 | 46 | 58 | 6 | 78 | 41 | 89 | 124 | 99 |
| Relationships(P) | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| Freedom(F) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Questions(?) | 8 | 4 | 5 | 3 | 2 | 3 | 11 | 6 | 8 |
| Unclassified(X) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Also, in examining the results, it is apparent that only one judge used the category RELATIONSHIPS(P). This category was to be used when the teacher implied or stated a relationship to a person or object. This category, however, could be confused with the category ORGANIZATION(O). When a teacher organized her class in a formation or drill, she may state, "Choose a partner." The category ORGANIZATION(O) would be used. But if a teacher said, "Run and cradle toward the person facing you," or ". . . toward the wall," this implies a relationship to another person or object. The category RELATIONSHIPS(P) would be used. Further clarification and refinement of this category seems evident.

The category UNCLASSIFIED(X) was not used by any judge in the SPECIFIC part of the category system, meaning that all the behavior that was observed could be classified using the system. Since this symbol was not recorded by any judge, the SPECIFIC part of the category system appears to have construct validity.

Non-specific part. Examining the total number of entries in the NON-SPECIFIC part of the system, only one category was not used by all three judges. The category RELATIONSHIPS(P) was not used. An example illustrative of teacher behavior in this part would be: "Run and move the crosse as fast as you can coming as close to others as you can without touching them." This statement implies a

relationship to other people and the behavior would be coded as P (RELATIONSHIPS) in the NON-SPECIFIC part of the system. As previously mentioned, this statement could be interpreted as being illustrative of a drill presented by the teacher. Further clarification of this category is necessary.

To determine if all the behaviors observed could be classified according to the system, the number of times the category UNCLASSIFIED(X) was used was determined. Since there were no codings recorded in this category by any judge, all the behaviors observed could be classified using the system. The NON-SPECIFIC part of the category system appears to have construct validity.

Specific and non-specific parts combined. The category system is presented as a whole in Table IX. When incorporating both parts of the category system, that is SPECIFIC and NON-SPECIFIC, all the categories were used by all three judges except RELATIONSHIPS(P) and UNCLASSIFIED(X). The category RELATIONSHIPS(P) was used by only one judge. All the behaviors observed by the judges could be classified using the system. Similar to those conclusions based on the results of accepting the SPECIFIC and NON-SPECIFIC parts as demonstrating construct validity, the same acknowledgments of the study hold true for construct validity of the system as a whole.

Content validity was estimated by examining the comprehensiveness and representativeness of the system as it applied to the teaching of the cradle in lacrosse to beginners. Careful examination of the lacrosse literature revealed that all of the categories, irrespective of teacher's intent, were upheld through direct references to the lacrosse literature. Based upon this fact, content validity was assumed for the category system in this study.

## SUMMARY

In order to determine whether the category system in this study was objective, reliable and valid, objectivity and reliability were estimated using the Pearson product-moment correlation technique. An examination of the coded observations of three trained judges was used to determine construct validity. A careful examination of the lacrosse literature was used to estimate content validity. Chapter 5 discussed the findings.

### Objectivity

When examining the data for objectivity for the SPECIFIC part of the system, correlation coefficients for Tapes #1, #2 and total Tapes #1, #2 and #3 for all three pairings of judges ranged from .969-.999. The standard for acceptance for objectivity was set at .90. The pairing of judges AB, AC and BC did reach this standard for the

above-mentioned tapes. On Tape #3, however, this standard was not attained by any pairings of judges.

On the NON-SPECIFIC part the standard of .90 was reached only by the pairing of judges BC and on only Tapes #1, #3 and total Tapes #1, #2 and #3. The pairings of judges AB and AC had coefficients ranging from .414-.698.

When both parts of the category system were combined, all the coefficients on all tapes for all pairings of judges reached the standard of .90. The coefficients ranged from .943-.998.

Reliability

In estimating reliability for the SPECIFIC part, the results ranged from .802-.999. The standard of acceptance of .90 was reached by all three judges on Tapes #1, #2 and total Tapes #1, #2 and #3. Judge A was the only judge to reach the standard on Tape #3.

For the NON-SPECIFIC part, the standard of .90 was reached only by judges B and C on all tapes except Tape #2. Judge A did not reach the standard of .90 on any of the tapes.

Concerning the combination of the SPECIFIC and NON-SPECIFIC parts, all judges on all tapes reached .90. The results ranged from .975-.999.

Validity

The category system was accepted as having construct validity for the SPECIFIC part, the NON-SPECIFIC part and for a combination of both parts. Only one category was not used by any of the judges in the SPECIFIC part, the category FREEDOM(F). Only one category was not used by any of the judges in the NON-SPECIFIC part, the category RELATIONSHIPS (P). All the categories were used by judge C in the SPECIFIC and NON-SPECIFIC parts combined except the category UNCLASSIFIED(X). Judges A and B used all the categories except RELATIONSHIPS(P).

Content validity was assumed on the basis of careful examination of the lacrosse literature. As presented in Chapter 3, all the categories irrespective of teacher's intent were upheld through direct references to the lacrosse literature.

# Chapter 6

## SUMMARY, CONCLUSIONS, IMPLICATIONS

### SUMMARY

The purpose of this study was to develop an objective, reliable and valid tool for the systematic description of selected teacher behavior evident in teaching the cradle in lacrosse to beginners. Considered as part of the teacher behavior was the intent of the teacher concerning how the students were to respond. It was assumed that at times the intent of the teacher was to have the students respond in a set, desired way with no opportunities offered to them to be responsible for their own behavior. This type of response was identified as specific. Likewise, it was assumed that at times the intent of the teacher was to have the students respond in their own way in which they were given a choice(s) to make their own behavioral decisions. This type of response was identified as non-specific.

Through a review of the literature available in the learning of physical skills, lacrosse, observational studies conducted in physical education that emphasized the identification and description of teacher behavior and through the personal experience of the investigator, components of a physical education lesson involving the teaching of the

cradle in lacrosse to beginners were identified. By operationally defining each component, the category system, designed to describe selected teacher behavior evident in teaching the cradle to beginners, was constructed. The system consisted of 12 categories and was divided into two parts. One part involved the concept of not allowing any choice to the students to be responsible for their own behavior. This part was identified as SPECIFIC. The other part of the system involved the concept of allowing the students choice or choices as to their own behavioral decisions. This part was identified as NON-SPECIFIC.

The technique used to observe and record the selected teacher behavior was based on a natural unit of analysis. A judgment was made and categorized each time the teacher's behavior changed. Incorporated within this judgment was the identification of the teacher's intent of student response.

Three trained judges served as observers in the use of the category system. The judges viewed three specially-prepared video taped lessons of three teachers teaching beginners the cradle in lacrosse. The coded observations of these judges served as the data used to estimate objectivity, reliability and validity of the category system.

In order to determine whether the category system was an objective and reliable measure of the selected teacher behavior within the context of this study, the

Pearson product-moment correlation technique was used. In estimating objectivity of the system, the three trained judges were paired with each other (AB, AC, BC). The coded observations of the three judges from the first session of viewing the tapes served as the data. Reliability was determined by comparing the coded observations of each judge from the first session with the coded observations of the same judge recorded during the second session of viewing the same tapes. This second session occurred five days later.

Construct and content validity of the category system were examined. By analyzing the quantity and distribution of all the teacher behaviors recorded as defined by the category system, construct validity was estimated. Content validity was determined through a careful analysis of the lacrosse literature as it applied to the teaching of the cradle to beginners.

## CONCLUSIONS

Within the limitations of the present study, several conclusions can be drawn:

1. The SPECIFIC part of the category system was accepted as being an objective, reliable and valid measure for systematically describing the selected teacher behavior evident in teaching the cradle in lacrosse to beginners. The following data support this conclusion:

a. Objectivity: all pairings of judges obtained the standard of .90 on Tapes #1, #2 and total Tapes #1, #2 and #3.

b. Reliability: all judges obtained the standard of .90 on Tapes #1, #2 and total Tapes #1, #2 and #3.

c. Construct Validity: all the categories except FREEDOM (F) were used.

2. The NON-SPECIFIC part of the category system showed promise for systematically describing the selected teacher behavior evident in teaching the cradle in lacrosse to beginners. The following data support this conclusion:

a. Objectivity: one pairing of judges, BC, reached the standard of .90 on Tapes #1, #3 and total Tapes #1, #2 and #3.

b. Reliability: two judges, B and C, reached the standard of .90 on Tapes #1, #3 and total Tapes #1, #2 and #3.

c. Construct Validity: all the categories except RELATIONSHIPS (P) were used.

3. The category system as a whole, when combining the SPECIFIC and NON-SPECIFIC parts, was accepted as an objective, reliable and valid measure for systematically describing selected teacher behavior in the teaching of the cradle in lacrosse to beginners. The following data support this conclusion:

a. Objectivity: all pairings of judges reached the standard of .90 on all individual tapes and total tapes combined.

b. Reliability: all judges reached the standard of .90 on all individual tapes and total tapes combined.

c. Construct Validity: all the categories were used.

Content Validity: a careful analysis of the lacrosse literature showed that all the categories could be upheld through direct references to the teaching of the cradle to beginners as found in the literature.

In summary, the category system was looked at as a whole and in two parts, SPECIFIC and NON-SPECIFIC. As a whole, it was found to be a more objective, reliable and valid tool for systematically describing the selected teacher behavior relevant to this study than when broken down into the two parts.

## IMPLICATIONS

The purpose of this study was to develop an objective, reliable and valid tool for the systematic description of selected teacher behavior evident in the teaching of the cradle to beginners. Two major implications from this study are suggested: (1) further development of the category system, and (2) the potential use of the category system as a means of providing feedback to teachers to help them become more aware of their own teaching behavior.

### Further Development of the Category System

In order that this category system be of assistance in research concerning the systematic description of teacher behavior evident in physical education lessons, four areas need further study:

1. The refinement of certain categories

2. Further clarification of the concept of a teacher's intent of how the students are to respond

3. Acquisition of consistent and acceptable measures of objectivity, reliability and validity when viewing the SPECIFIC and NON-SPECIFIC parts separately

4. Possible enlargement of the system.

The results of this study showed that the categories in the NON-SPECIFIC part of the category system did not show as high a measure of objectivity and reliability as that achieved in the SPECIFIC part. Re-examination of those categories in the NON-SPECIFIC part as to their relevance to the concept of allowing students opportunity to be responsible for their own behavior is needed. A clearer definition and refinement of each is recommended.

Two of the categories in the SPECIFIC part need to be more clearly defined and re-examined as to their inclusion in the SPECIFIC part. The FREEDOM(F) category needs further refinement or possible deletion. The RELATIONSHIPS (P) category also needs further development.

Clarification needs to be done in the area of teacher intent. The NON-SPECIFIC part of the category system was not as strong as the SPECIFIC part as can be seen by the results obtained. It is felt by the investigator that a reason for this was the lack of understanding of this

concept of identifying when the teacher allowed students a choice or choices as to their own behavioral decisions. More research is needed in this area so that this concept can be better understood and more clearly identified.

When the two parts of the category system, especially the NON-SPECIFIC part, are more clearly identified and defined, objectivity, reliability and validity of the system can be re-estimated. Several suggestions are offered to the possible attainment of consistent and acceptable indicators of objectivity, reliability and validity:

1. Enlarging the sample of teachers and students so as to encompass as much varied teacher behavior as possible

2. Using equipment, such as a portable microphone, that could more accurately and consistently record the verbal behavior of the teacher

3. Enlarging the number of judges to attain a better measure of objectivity, reliability and validity

4. Selecting judges who have knowledgeable understanding of problem-solving techniques as well as the concept of allowing students opportunities to be responsible for their own behavior

5. Acquiring samples of actual lessons in lacrosse in both indoor and outdoor environments in order that the behavior of both teachers and students be as realistic as possible.

In the future development of the category system, possible enlargement of the system could be made so that it applies to teacher behavior evident in lacrosse skills other than the cradle. The system might be modified so that it could encompass teacher behavior in other activities in physical education lessons.

It is also conceivable that the enlargement of the system could include the recording of student behavior. The system then could pertain to the relationship between teacher behavior and student behavior and perhaps give greater insight into what might guide the choice and use of particular teaching methods.

A Means of Providing Feedback

The purpose of this category system was to merely identify and describe selected teacher behavior. It was constructed to show that teacher behavior that actually occurred in specific lessons. The use of the system could be a valuable asset in providing a means for specific feedback to teachers. This feedback could help teachers become more aware of what they actually did during a specific teaching lesson. As Barrett (1969:204) noted, "It is assumed that the greater insight teachers have into their own behavior the more their future behavior will be influenced." This same assumption is held by the investigator of this study.

It is the hope of the investigator of this study that through the use of this category system or through the use of other procedures that pertain to the identification and description of teacher behavior in physical education lessons, greater insight can be gained into the actual teaching process. Perhaps in time, efforts to identify and describe the teaching process in the learning of physical skills will lead to improved teaching in physical education.

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# APPENDIXES

# APPENDIX A

## Raw Data Tables

TABLE X

RAW DATA FOR JUDGES A, B AND C FOR
FIRST AND SECOND SESSIONS FOR
TAPE #1 FOR SPECIFIC PART

| Category | Judge | | | | | |
|---|---|---|---|---|---|---|
| | A | | B | | C | |
| | Session | | | | | |
| | 1 | 2 | 1 | 2 | 1 | 2 |
| Demonstration(D) | 20 | 17 | 19 | 19 | 17 | 17 |
| Body Parts(B) | 21 | 17 | 28 | 29 | 26 | 25 |
| Space (S) | 86 | 98 | 77 | 85 | 79 | 91 |
| Organization(O) | 23 | 21 | 26 | 27 | 25 | 25 |
| Quality(Q) | 4 | 6 | 7 | 7 | 5 | 5 |
| Manual Assistance(M) | 4 | 3 | 3 | 4 | 4 | 4 |
| Analysis(A) | 1 | 4 | 1 | 1 | 1 | 1 |
| Reinforcement(R) | 18 | 14 | 15 | 14 | 17 | 16 |
| Relationships(P) | 0 | 0 | 0 | 0 | 0 | 0 |
| Freedom(F) | 0 | 0 | 0 | 0 | 0 | 0 |
| Questions(?) | 0 | 0 | 0 | 0 | 0 | 0 |
| Unclassified(X) | 0 | 0 | 0 | 0 | 0 | 0 |

TABLE XI

RAW DATA FOR JUDGES A, B AND C FOR FIRST AND SECOND SESSIONS FOR TAPE #2 FOR SPECIFIC PART

| Category | Judge | | | | | |
|---|---|---|---|---|---|---|
| | A | | B | | C | |
| | Session | | | | | |
| | 1 | 2 | 1 | 2 | 1 | 2 |
| Demonstration(D) | 9 | 10 | 17 | 20 | 16 | 17 |
| Body Parts(B) | 41 | 41 | 47 | 47 | 45 | 43 |
| Space(S) | 42 | 40 | 48 | 45 | 47 | 46 |
| Organization(O) | 9 | 11 | 13 | 13 | 10 | 10 |
| Quality(Q) | 5 | 5 | 6 | 7 | 5 | 6 |
| Manual Assistance(M) | 4 | 5 | 6 | 4 | 6 | 5 |
| Analysis(A) | 3 | 4 | 1 | 1 | 1 | 1 |
| Reinforcement(R) | 32 | 29 | 31 | 32 | 30 | 30 |
| Relationships(P) | 0 | 0 | 0 | 0 | 0 | 0 |
| Freedom(F) | 0 | 0 | 0 | 0 | 0 | 0 |
| Questions(?) | 5 | 4 | 4 | 5 | 4 | 5 |
| Unclassified(X) | 0 | 0 | 0 | 3 | 0 | 0 |

TABLE XII

RAW DATA FOR JUDGES A, B AND C FOR FIRST AND SECOND SESSIONS FOR TAPE #3 FOR SPECIFIC PART

| Category | Judge | | | | | |
|---|---|---|---|---|---|---|
| | A | | B | | C | |
| | Session | | | | | |
| | 1 | 2 | 1 | 2 | 1 | 2 |
| Demonstration(D) | 4 | 8 | 3 | 6 | 11 | 10 |
| Body Parts(B) | 10 | 14 | 2 | 10 | 10 | 11 |
| Space(S) | 25 | 29 | 5 | 10 | 25 | 28 |
| Organization(O) | 4 | 6 | 1 | 5 | 11 | 10 |
| Quality(Q) | 11 | 15 | 1 | 1 | 10 | 10 |
| Manual Assistance(M) | 6 | 5 | 0 | 0 | 6 | 5 |
| Analysis(A) | 0 | 1 | 0 | 2 | 0 | 1 |
| Reinforcement(R) | 33 | 32 | 0 | 0 | 11 | 35 |
| Relationships(P) | 0 | 0 | 0 | 0 | 1 | 1 |
| Freedom(F) | 0 | 0 | 0 | 0 | 0 | 0 |
| Questions(?) | 3 | 2 | 0 | 0 | 1 | 1 |
| Unclassified(X) | 0 | 0 | 0 | 0 | 0 | 0 |

TABLE XIII

RAW DATA FOR JUDGES A, B AND C FOR FIRST AND SECOND SESSIONS FOR TAPE #1 FOR NON-SPECIFIC PART

| Category | Judge | | | | | |
|---|---|---|---|---|---|---|
| | A | | B | | C | |
| | Session | | | | | |
| | 1 | 2 | 1 | 2 | 1 | 2 |
| Demonstration(D) | 0 | 0 | 0 | 0 | 0 | 0 |
| Body Parts(B) | 0 | 0 | 2 | 2 | 1 | 1 |
| Space(S) | 2 | 2 | 5 | 4 | 4 | 5 |
| Organization(O) | 3 | 0 | 1 | 3 | 1 | 1 |
| Quality(Q) | 1 | 1 | 4 | 4 | 3 | 3 |
| Manual Assistance(M) | 0 | 0 | 0 | 0 | 0 | 0 |
| Reinforcement(R) | 0 | 2 | 1 | 1 | 1 | 0 |
| Relationships(P) | 0 | 0 | 0 | 0 | 0 | 0 |
| Freedom(F) | 0 | 0 | 0 | 0 | 0 | 0 |
| Questions(?) | 0 | 0 | 0 | 0 | 0 | 0 |
| Unclassified(X) | 0 | 0 | 0 | 0 | 0 | 0 |

TABLE XIV

RAW DATA FOR JUDGES A, B AND C FOR FIRST AND SECOND SESSIONS FOR TAPE #2 FOR NON-SPECIFIC PART

| Category | Judge | | | | | |
|---|---|---|---|---|---|---|
| | A | | B | | C | |
| | Session | | | | | |
| | 1 | 2 | 1 | 2 | 1 | 2 |
| Demonstration(D) | 0 | 0 | 1 | 1 | 0 | 0 |
| Body Parts(B) | 0 | 0 | 4 | 3 | 2 | 2 |
| Space(S) | 0 | 2 | 6 | 4 | 5 | 6 |
| Organization(O) | 0 | 0 | 5 | 5 | 2 | 2 |
| Quality(Q) | 0 | 0 | 0 | 2 | 2 | 2 |
| Manual Assistance(M) | 0 | 0 | 1 | 1 | 0 | 0 |
| Reinforcement(R) | 0 | 0 | 6 | 6 | 5 | 5 |
| Relationships(P) | 0 | 0 | 0 | 0 | 0 | 0 |
| Freedom(F) | 2 | 0 | 6 | 3 | 5 | 7 |
| Questions(?) | 0 | 0 | 1 | 1 | 0 | 0 |
| Unclassified(X) | 0 | 0 | 0 | 0 | 0 | 0 |

TABLE XV

RAW DATA FOR JUDGES A, B AND C FOR FIRST AND SECOND SESSIONS FOR TAPE #3 FOR NON-SPECIFIC PART

| Category | Judge | | | | | |
|---|---|---|---|---|---|---|
| | A | | B | | C | |
| | Session | | | | | |
| | 1 | 2 | 1 | 2 | 1 | 2 |
| Demonstration(D) | 1 | 0 | 13 | 12 | 1 | 1 |
| Body Parts(B) | 4 | 3 | 25 | 25 | 11 | 9 |
| Space(S) | 8 | 7 | 60 | 54 | 33 | 32 |
| Organization(O) | 15 | 7 | 41 | 37 | 7 | 8 |
| Quality(Q) | 11 | 9 | 43 | 37 | 34 | 35 |
| Manual Assistance(M) | 0 | 2 | 9 | 12 | 0 | 0 |
| Reinforcement(R) | 6 | 5 | 71 | 67 | 35 | 32 |
| Relationships(P) | 0 | 0 | 0 | 0 | 0 | 0 |
| Freedom(F) | 3 | 2 | 5 | 3 | 4 | 5 |
| Questions(?) | 3 | 0 | 1 | 2 | 3 | 4 |
| Unclassified(X) | 0 | 0 | 0 | 2 | 0 | 0 |

# APPENDIX B

## Samples of Teacher Behavior and Appropriate Coding

## SAMPLE OF TEACHER BEHAVIOR AND CODING OF TAPE #1*

| Teacher Behavior: | Coding YES | Coding NO |
|---|---|---|
| As you step on your left foot, the crosse is over your left foot and as you step on your right foot, the crosse is over your right foot. | S B<br>S S<br>B<br>S B S<br>S B | |
| And left, cradle, right, cradle, cradle, cradle, cradle. | S O S O<br>O O O | |
| Now let's go faster, but at your own speed. | Q | Q |
| When you feel like going faster, then pick up the pace. | | Q |
| That's good. Keep going. | | R R |
| Good. Stop. Check your grip. | R O O | |
| Try again at your own speed. | O | Q |
| Rest a minute. | O | |
| Get a ball and put it in your crosse. | O O | |
| Form a line. | O | |
| Don't look at your ball, but keep your head up. | O<br>S S | |
| Follow me. Left, right, left, right, left, right, cradle, cradle, cradle, cradle, cradle. And halt. | DO S S S<br>S S S OO<br>OO O | |
| Jog and cradle. | O | |
| Now run and cradle. | O | |

*The underlined words correspond to the coding symbols.

## SAMPLE OF TEACHER BEHAVIOR AND CODING OF TAPE #2*

| Teacher Behavior: | Coding YES | NO |
|---|---|---|
| Let's twist our bodies back and forth, back and forth, back and forth. | DBBS | |
| | SSS | |
| | S | |
| That's it. Good. | R R | |
| Put your arms out, like this. | DBS | |
| And twist your body back and forth. | BBSS | |
| See how far around you can twist. | Q B | |
| Bend your elbow at your waist. | B B B | |
| Now twist your wrists too. | B B | |
| Good. | R | |
| Bring your forearm across your waist. | B S | |
| | B | |
| Pick up your crosse. | O | |
| Put your right hand on top and left hand at the bottom like this. | S B S | |
| | S B S D | |
| Hold the crosse perpendicular to the floor. | S | |
| Now twist your body and wrists like before. | B B B | |
| Start to move at your own speed. | | P Q |
| Keep twisting your body. | B B | |
| Stop and go to the original twisting position. | O O B | |
| And twist, twist, twist, twist. | OBBB | |

*The underlined words correspond to the coding symbols.

## SAMPLE OF TEACHER BEHAVIOR AND CODING OF TAPE #3*

| Teacher Behavior: | Coding YES | Coding NO |
|---|---|---|
| Run about the gym freely for a bit. | | F |
| Let's clasp our hands together and go again, as quickly as you like. | B B S | Q |
| Now change speeds, good, yes, yes. | | Q R R R |
| Take your crosse, put your hands together like this. | O B<br>S D | |
| Now move about. Keep going! | | F R |
| Good! Put a hand at the bottom and the other at the top, here. | S B S D | R B |
| Now go again at your own speed. | | O Q |
| Change speeds. Yes! Good! | | Q R R |
| Rest a bit. | O | |
| Move the crosse as you did when you were running about, but this time, without running. | O<br>O | |
| Try to keep the crosse straight up and down now. | S<br>S S | |
| Higher. Good! Yes. | S R R | |
| Let's go again, easily this time. | O Q | |
| Keep the crosse moving smoothly. | Q | |
| And rest. | O | |

*The underlined words correspond to the coding symbols.

# APPENDIX C

## Sample Recording Sheet

## SAMPLE RECORDING SHEET

Judge: C

Date: August 19, 1971

Observation #: 2

Tape #: 3

| YES | NO |
|---|---|
| D S O B S S | O S S S S Q B |
| B S | O Q S Q Q Q Q Q R ~ R |
| D S | B S S S Q F Q B Q R R |
| D S S O ~ R D B Q S | |
| O ~ | Q S S R F R |
| S B O | B S F Q O F B S $\overline{\text{DOSS}}$ O |
| S B S R R O R R R | Q B S Q |
| ~ R D S B S O | Q Q Q Q Q |
| B S R $\overline{\text{DSSSS}}$ | F Q R R Q Q S R Q R Q R |
| O Q R R Q R R Q R O M B S S | |
| B M | Q B O Q R R |
| D S S D S | S S B S Q R S Q O S Q S |
| D B M | R Q R ? Q R R R R |
| O M Q Q R R R M ~ $\overline{\text{?SAD}}$ | O ? Q ? S R R R R |
| ~ R S B R P R R R | |
| R R R R | S Q R R R |
| Q R R R | $\overline{\text{?Q}}$ R R R |
| Q Q S Q S | S S S S S S R R R B S O S |
| O S R R R R R R R | |